SEN-231CD

SERVICE MANUAL

US Model
Canadian Model
Mexican Model

This system is composed of following model.
As for the service manual, it is issued for each component model, then please refer to it.

COMPONENT MODEL NAME FOR THESE SYSTEM

Amplifier Tuner Tape Deck	HST-231
Compact Disc	CDP-C231

SPECIFICATIONS

Power requirements	120V AC, 60 Hz
Power consumption	190W (Model for USA/Mexico)
	380VA (Model for Canada)
Accessories supplied	AM loop antenna (1)
	FM wire antenna (1)
	Remote Commander RM-S102 (1)
	Sony batteries SUM-3 (NS) (2)
	Audio signal connecting cord
	(phono plug X2 ⟷ phono plugX2) (1)
	SYSTEM CONTROL cord (1)
	Headphone MDR-006 (1)
	(Model for Canada)
	Plug adaptor (1) (Model for Canada)

Parts LIST (ACCESSORY & PACKING GROUP)

Part No.	Description
1-465-426-11	REMOTE COMMANDER (RM-S102)
1-501-374-11	ANTENNA, LOOP
1-506-652-11	ADAPTOR, PLUG (Canadian)
1-559-534-11	CORD, CONNECTION
1-690-674-11	CORD (WITH CONNECTOR)
2-181-754-01	COVER (MLY), BATTERY (RM-S102)
3-756-234-11	MANUAL, INSTRUCTION (SPANISH) (Mexican)
3-756-234-22	MANUAL, INSTRUCTION (ENGLISH) (US, Canadian)
3-756-234-31	MANUAL, INSTRUCTION (FRENCH) (Canadian)
*4-955-917-01	INDIVIDUAL CARTON
8-952-447-90	HEADPHONE (MDR-006) (Canadian)

• Items marked " * " are not stocked since they are seldom required for routine service. Some should be anticipated when ordering these items.

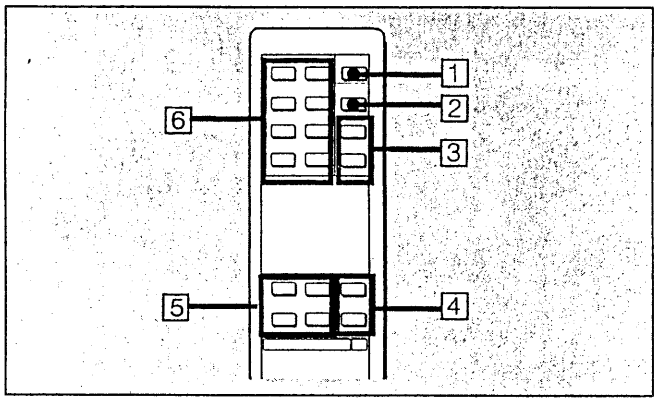
Design and Specifications subject to change without notice.

STEREO COMPONENT SYSTEM

SONY®

Remote Commander

The remote commander supplied with this unit can control the unit from a distance. The remote commander is divided into 6 sections according to the functions as shown below.



1 **POWER button**

2 **DBFB button** (This button does not operate.)

3 **TUNER PRESET +/– buttons**

4 **VOL (volume) +/– buttons**

5 **Function selectors**

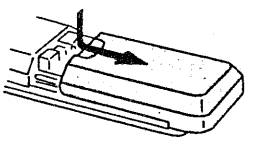
6 **CD player operation buttons**
In the TUNER mode:
Press CD ► once, the unit enters the CD mode.
Press CD ► twice, the CD player starts playback.
In the mode other than the TUNER mode:
Press CD ► once, the unit enters the CD mode and starts playback.

Battery life
About half a year of normal operation can be expected when using the Sony SUM-3 (NS) batteries. When the batteries are exhausted, the remote commander can no longer operate the unit. If this happens, replace both batteries with new ones.

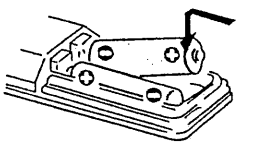
To avoid battery leakage
When the commander is not be used for a long time, remove the batteries to avoid damage caused by battery leakage and corrosion.

Inserting the batteries into the remote commander

1 Open the cover.



2 Insert two size-AA (R6) batteries with correct polarity.



9-957-565-12

Sony Corporation
Audio Group

English
93E09039-1
Printed in Japan
© 1993.5
Published by Audio Sector Quality Assurance Dept.

CDP-C231

SERVICE MANUAL

US Model
Canadian Model
Mexican Model

- The CDP-C231 is similar to the earlier CDP-C221 (US model).
  Refer to the CDP-C221 SERVICE MANUAL for information not contained in this service manual
- This set is the CD player section in SEN-231.

PARTS LIST(The difference between CDP-C221 and CDP-231)

page	CDP-C221		CDP-C231	
	Ref.No.	Part.No.	Part.No.	Description
19	1	A-4660-027-A	A-4660-256-A	PANEL ASSY, FRONT
21	120	* 4-944-632-31	* 4-944-632-62	PANEL, BACK

NOTE :

● Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

COMPACT DISC PLAYER

SONY®

Sony Corporation
Audio Group

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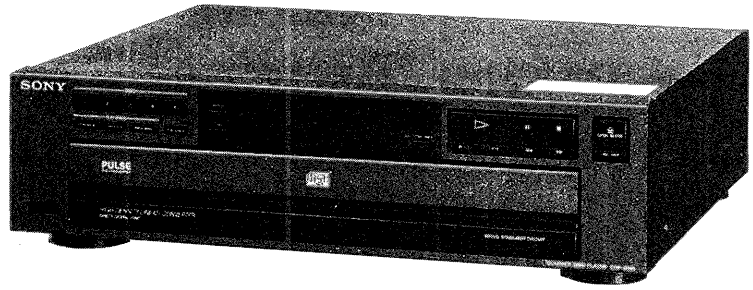
Published by Audio Sector Quality Assurance Dept.

9-957-674-12

CDP-C221

SERVICE MANUAL

US Model
Canadian Model
Mexican Model



This set is the
CD player section in
SEN–221CD

COMPACT disc DIGITAL AUDIO

Model Name Using Similar Mechanism	CDP-C312M
Optical Pick-up Block Type	BU-5BD3/M

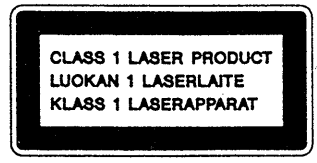
SPECIFICATIONS

System	Compact disc digital audio system
Laser	Semiconductor laser (λ = 780 nm) Emission duration: continuous
Laser output	Max. 44.6 μW* * This output is the value measured at a distance of about 200 mm from the objective lens surface on the Optical Pick-up Block.
Frequency response	2 Hz – 20 kHz (±0.5 dB)
Harmonic distortion	Less than 0.01 % (1 kHz)
Signal to noise ratio	More than 100 dB
Dynamic range	More than 98 dB
Dimensions	Approx. 430 x 125 x 385 mm (w/h/d) (17 x 5 x 15 1/4 inches)
Weight	Approx. 5.1 kg (11 lb 4 oz) net

Design and specifications subject to change without notice.

For the CD player

This Compact Disc player is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT label is located on the rear exterior.



Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

THIS APPARATUS COMPLIES WITH THE CLASS B LIMITS FOR RADIO NOISE EMISSIONS SET OUT IN RADIO INTERFERENCE REGULATIONS.

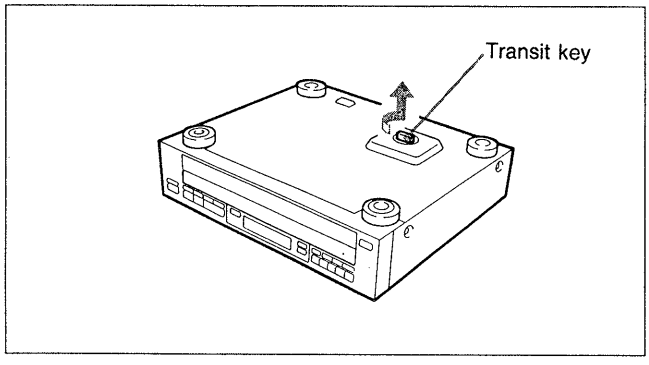
COMPACT DISK PLAYER

SONY®

Note on the Transit Key

The transit key on the bottom exterior of the unit protects the optical system against shock during transportation. Before operating the CD player, be sure to remove the key by following the instructions on the label, and store it in a safe place.

When transporting the unit, replace the key in its original hole and lock it in place.



NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic breakdown because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.

During repair, pay attention to electrostatic breakdown and also use the procedure in the printed matter which is included in the repair parts.

The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30cm away from the objective lens.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to follow carefully the instructions below when servicing.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

1. Laser Diode Properties
   - Material: GaAlAs
   - Wavelength: 780 nm
   - Emission Duration: continuous
   - Laser Output: max. 44.6 μW*

     * This output is the value measured at a distance of about 200 mm from the objective lens surface on the Optical Pick-up Block.

2. During service, do not take the Optical Pick-up Block apart, and do not adjust the APC circuit. If there is a breakdown in the APC circuit (including laser diode), replace the entire Optiocal Pick-up Block (including APC borad).

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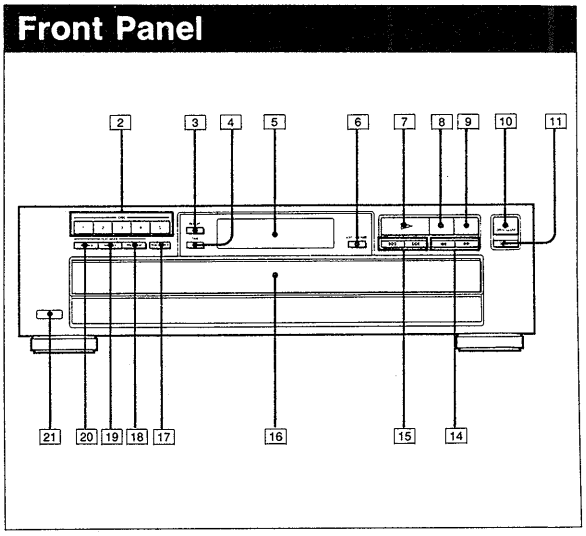
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1
GENERAL

1-1. LOCATION OF CONTROLS

Front Panel

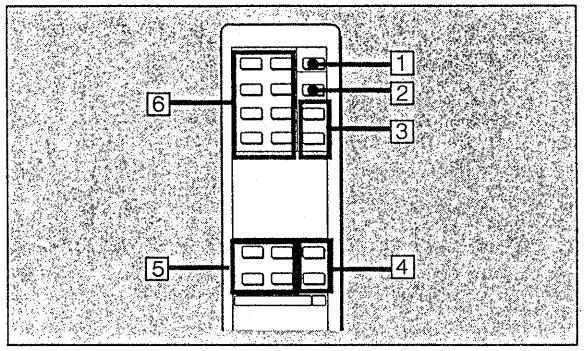


2 Disc 1-5 buttons
3 REPEAT button
4 TIME button
5 Display window
6 EDIT/TIME FADE button
7 ► (play) button
8 ❚❚ (pause) button
9 ■ (stop) button
10 ⏏ OPEN/CLOSE button
11 DISC SKIP button
14 ◄◄/►► (manual search) buttons
15 ⏮/⏭ (AMS*) buttons
16 Disc tray
17 PEAK SEARCH button
18 PROGRAM button
19 SHUFFLE button
20 CONTINUE button
21 Remote sensor

* AMS is the abbreviation of Automatic Music Sensor.

Remote Commander

The remote commander supplied with this unit can control the unit from a distance. The remote commander is divided into 6 sections according to the functions as shown below.



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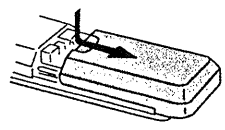
Battery life
About half a year of normal operation can be expected when using the Sony SUM-3 (NS) batteries. When the batteries are exhausted, the remote commander can no longer operate the unit. If this happens, replace both batteries with new ones.

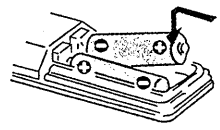
To avoid battery leakage
When the commander is not be used for a long time, remove the batteries to avoid damage caused by battery leakage and corrosion.

Inserting the batteries into the remote commander

1 Open the cover.

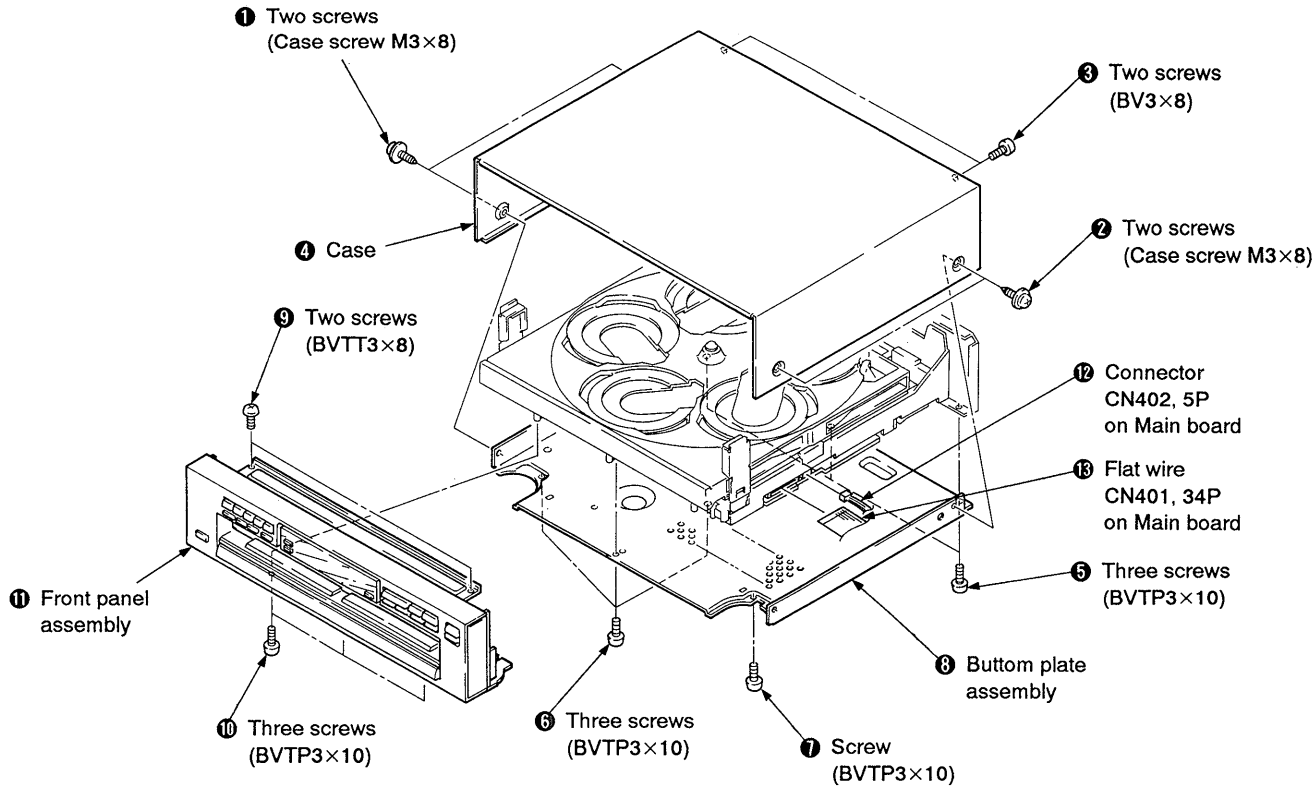


2 Insert two size-AA (R6) batteries with correct polarity.

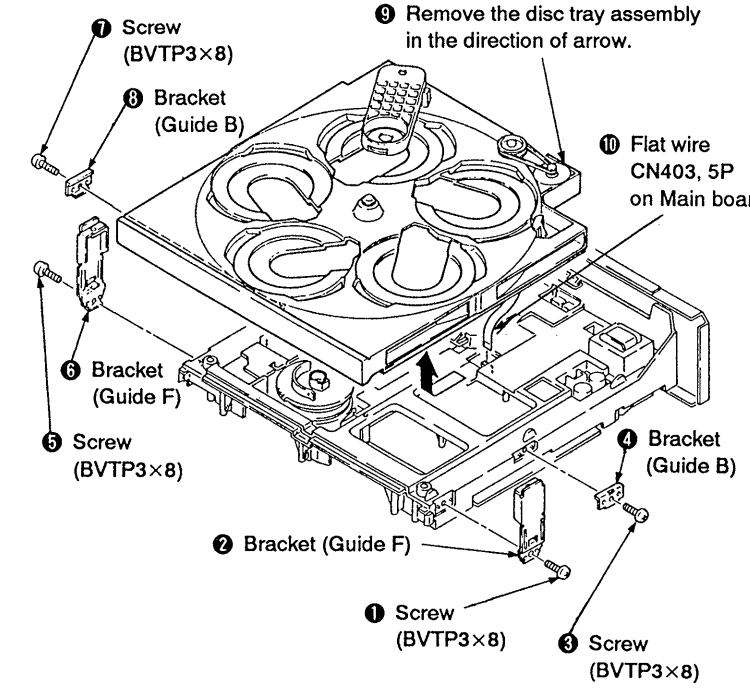


SECTION 2
DISASSEMBLY

2-1. REMOVAL OF FRONT PANEL AND CASE ASSEMBLIES

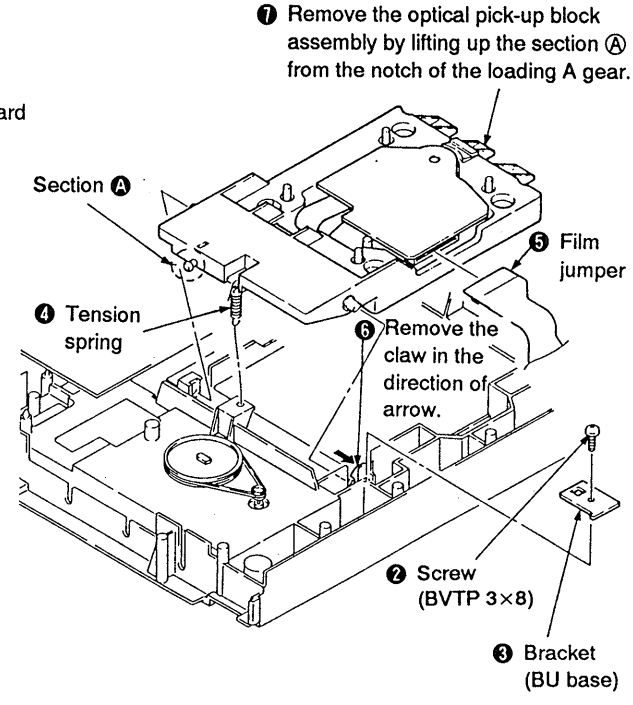

❶ Two screws (Case screw M3×8)
❸ Two screws (BV3×8)
❹ Case
❷ Two screws (Case screw M3×8)
❾ Two screws (BVTT3×8)
⓬ Connector CN402, 5P on Main board
⓭ Flat wire CN401, 34P on Main board
❺ Three screws (BVTP3×10)
⓫ Front panel assembly
❽ Buttom plate assembly
⓾ Three screws (BVTP3×10)
❻ Three screws (BVTP3×10)
❼ Screw (BVTP3×10)

2-2. REMOVAL OF DISC TRAY ASSEMBLY


❼ Screw (BVTP3×8)
❾ Remove the disc tray assembly in the direction of arrow.
❽ Bracket (Guide B)
❿ Flat wire CN403, 5P on Main board
❻ Bracket (Guide F)
❺ Screw (BVTP3×8)
❹ Bracket (Guide B)
❷ Bracket (Guide F)
❶ Screw (BVTP3×8)
❸ Screw (BVTP3×8)

2-3. REMOVAL OF OPTICAL PICK-UP BLOCK ASSEMBLY

❶ Replace the set up side down.

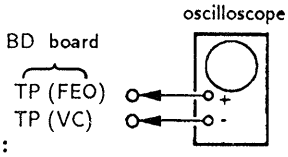

❼ Remove the optical pick-up block assembly by lifting up the section Ⓐ from the notch of the loading A gear.
Section Ⓐ
❺ Film jumper
❹ Tension spring
❻ Remove the claw in the direction of arrow.
❷ Screw (BVTP 3×8)
❸ Bracket (BU base)

SECTION 3
ELECTRICAL BLOCK CHECKING

Note :

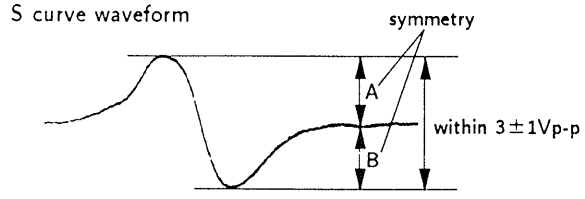
1. CD Block basically constructed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use the oscilloscope with more than 10MΩ impedance.
4. Clean an object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

S Curve Check



Procedure :

1. Connect oscilloscope to test point TP (FEO) on BD board.
2. Connect between test point TP (FES) and TP (VC) by lead wire.
3. Turned Power switch on and actuate the focus serch. (actuate the focus serch when disc table is moving in and out.)
4. Check the oscilloscope waveform (S curve) is symmetrical between A and B. And confirm peak to peak level within 3±1Vp-p.

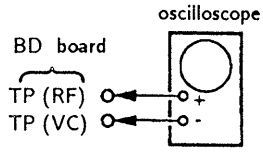


5. After check, remove the lead wire connected in step 2.

Note : • Try to mesure several times to make sure that the ratio of A : B or B : A is more than 10 : 7.

• Take sweep time as long as possible and light up the brightness to obtain best waveform.

RF Level Check

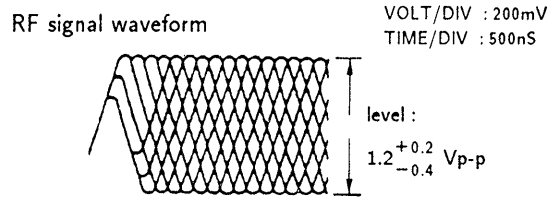


Procedure :

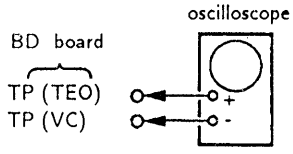
1. Connect oscilloscope to test point TP (RF) on BD board.
2. Turn Power switch on.
3. Put disc (YEDS-18) in and playback.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note :

Clear RF signal waveform means that the shape "◇" can be clearly distinguished at the center of the waveform.

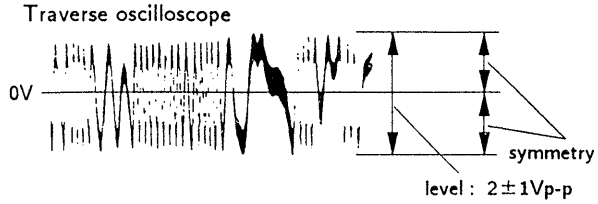


E-F Balance Check



Procedure :

1. Connect test point TP (ADJ) to ground and TP (TES) to TP (VC) with lead wire.
2. Connect oscilloscope to test point TP (TEO) on BD board.
3. Turn Power switch on.
4. Put disc (YEDS-18) in and playback.
5. Confirm that the osilloscope waveform is symmetrical on the top and bottom in relation to 0V, and check this level.

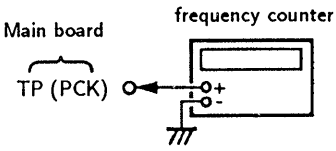


6. Remove the lead wire connected in step 1.

RF PLL Free-run Frequency Check

Procedure :

1. Connect frequency counter to test point (PCK) with lead wire.



2. Turn Power switch on.
3. Confirm that reading on frequency counter is 4. 3218MHz.

Focus/Tracking Gain

This gain has a margin, so even if it is slightly off. There is no problem.

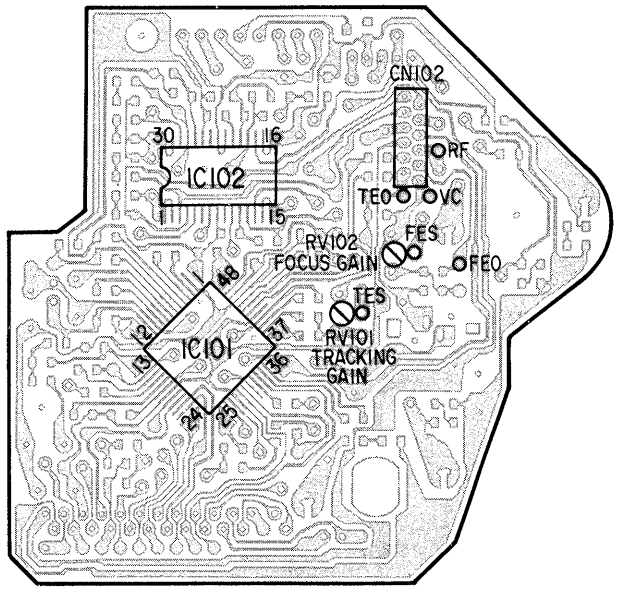
Therefore, do not perform, this adjustment.

Please note that it should be fixed to mechanical center position when you moved and do not know original position.

Adjustment Locations :

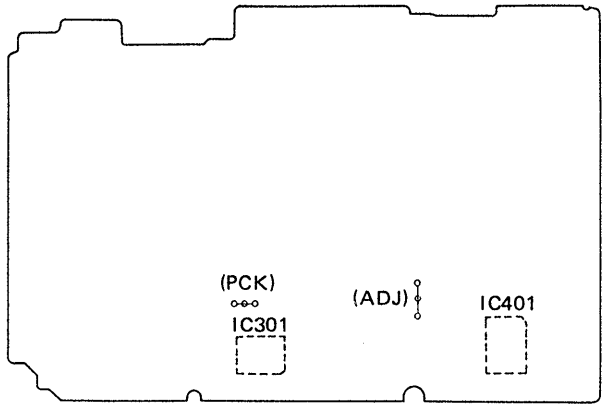
[BD board]

— conductor side —



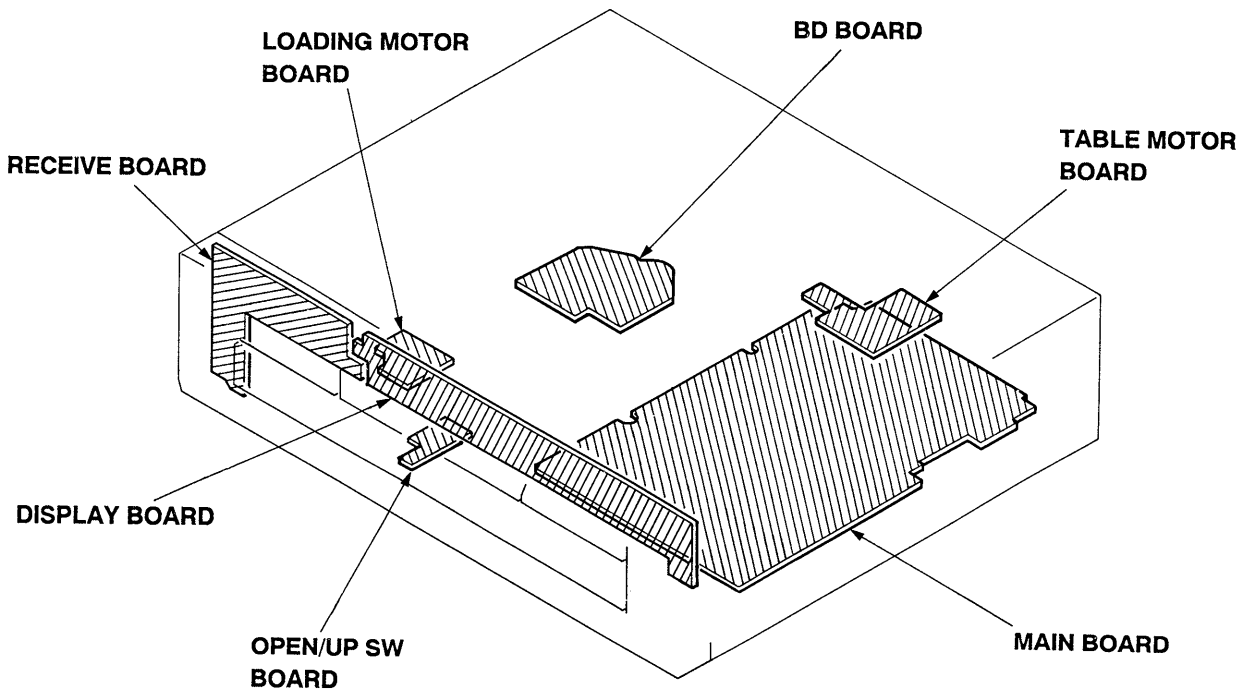
[Main board]

— component side —



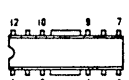
SECTION 4
DIAGRAMS

4-1. CIRCUIT BOARDS LOCATION

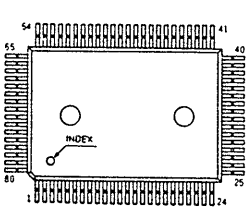


4-2. SEMICONDUCTOR LEAD LAYOUTS

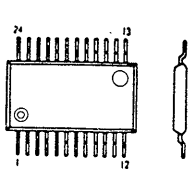
CXA1291P



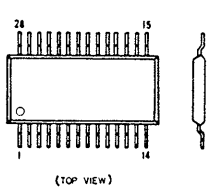
CXD2500AQ
CXP50116-279Q



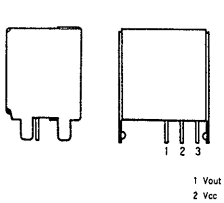
CXD2560M



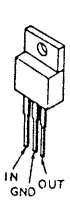
CXD2561M



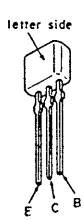
GP1U52XB



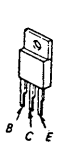
M5F7807L



2SA2785-HFE

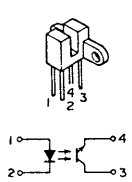


2SB1094-LK

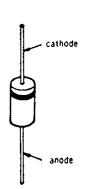


2SC3623A-LK
DTA144ES
DTC114ES
DTC144ES

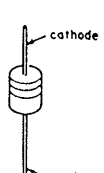
GP-1A521



1N4148M

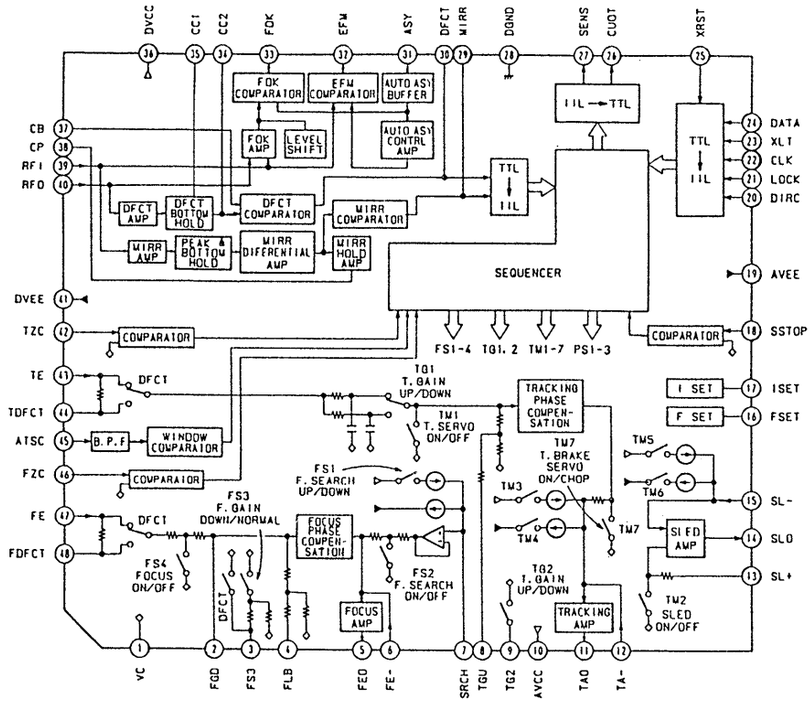


RD5.6ES-B2

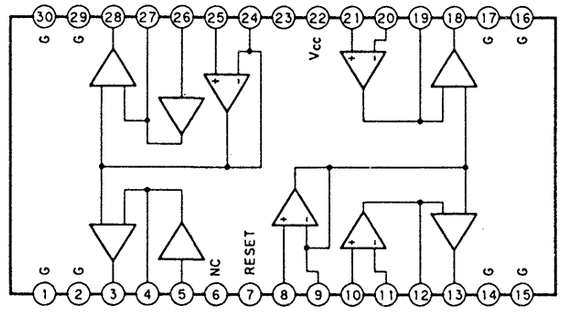


4-3. IC BLOCK DIAGRAMS

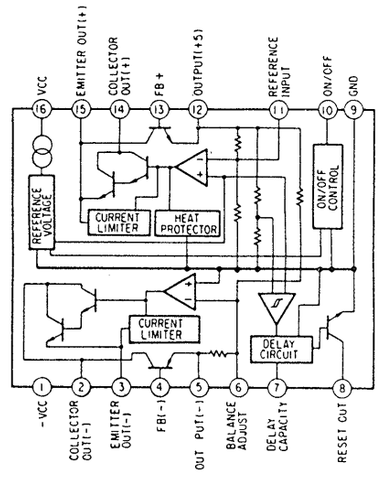
IC101 CXA1372Q



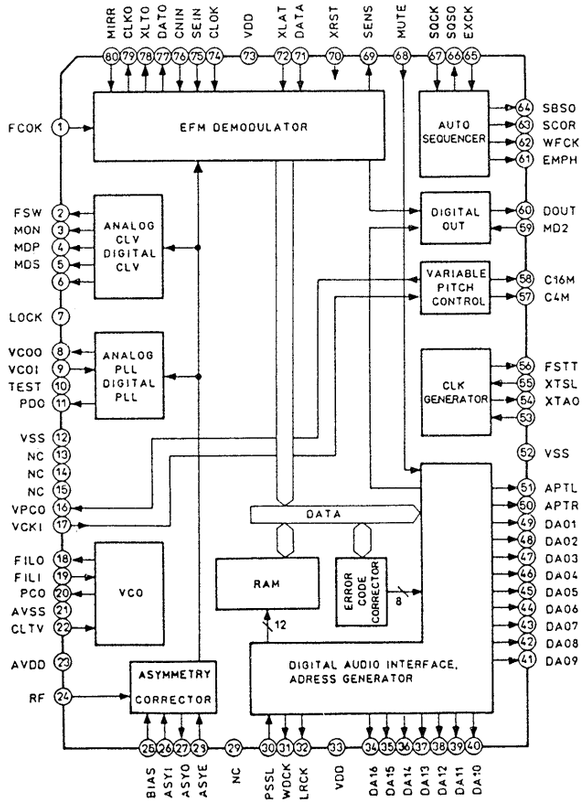
IC102 LA6532M



IC202 M5290P-16



IC301 CXD2500Q



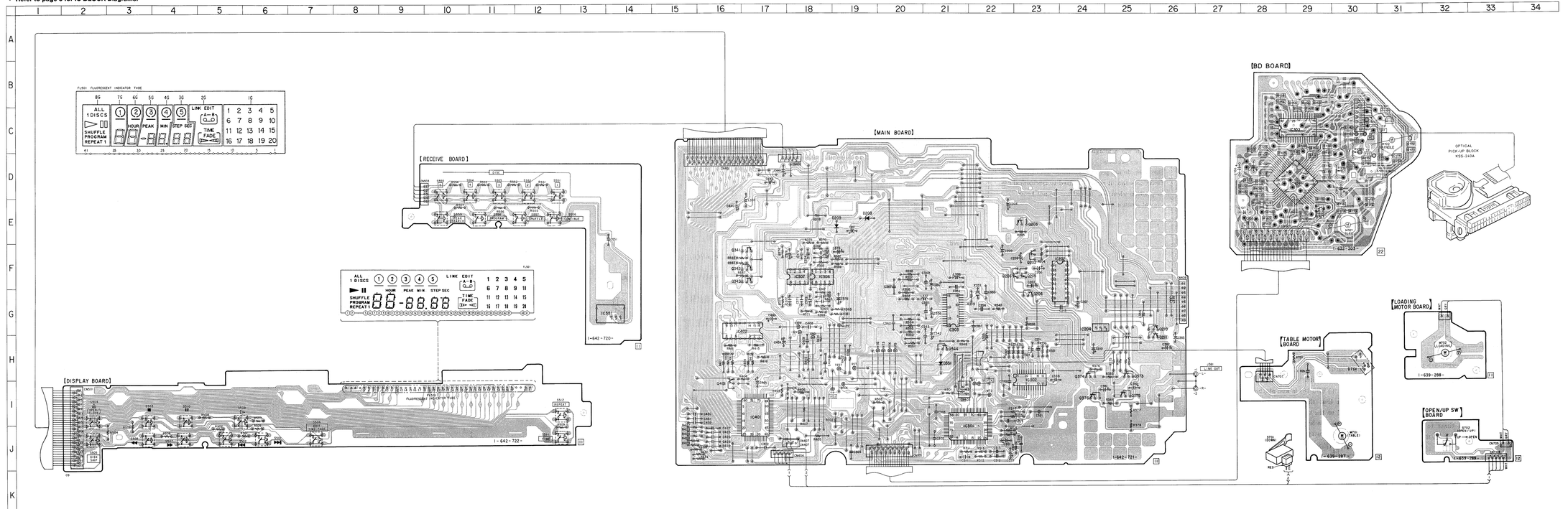
4-4. PRINTED WIRING BOARDS

• Refer to page 8 for IC BLOCK Diagrams.

• Semiconductor Location

Ref. No.	Location
D208	E-19
D209	E-19
D351	H-21
D701	H-30
IC101	D-29
IC102	C-29
IC202	F-23
IC204	G-24
IC301	J-21
IC302	I-23
IC303	G-21
IC306	F-18
IC307	F-18
IC401	I-17
IC402	G-16
IC551	G-14
Q101	E-29
Q202	F-23
Q203	E-23
Q204	G-23
Q205	F-23
Q206	F-23
Q210	G-26
Q211	H-26
Q341	F-16
Q342	F-16
Q343	F-16
Q344	H-21
Q373	F-17
Q374	F-17
Q375	F-17
Q376	F-17
Q401	I-16

Note:
- ○——: parts extracted from the component side.
- ●: Through hole.
- : Pattern on the side which is seen.
- : Pattern of the rear side.



4-5. SCHEMATIC DIAGRAM

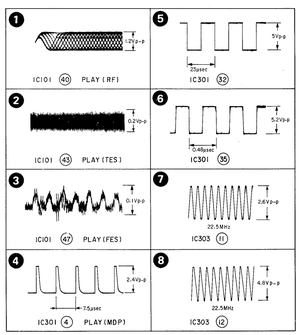
• Refer to page 7 for Semiconductor Lead Layout.

Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

- ▭▭ : B+ Line
- ▭▭ : B– Line
- ▭ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- Voltages are taken with a VOM (Input Impedance 10MΩ) Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : CD

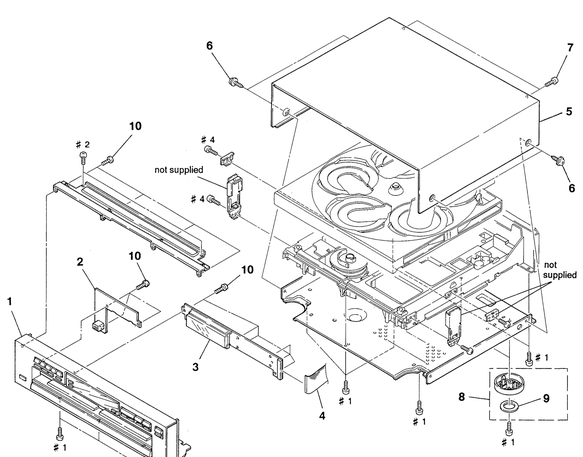


SECTION 5
EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ Parts color ↑ Cabinet's color
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.
- Canadian model is abbreviated as CND, and also Mexican model is MX.

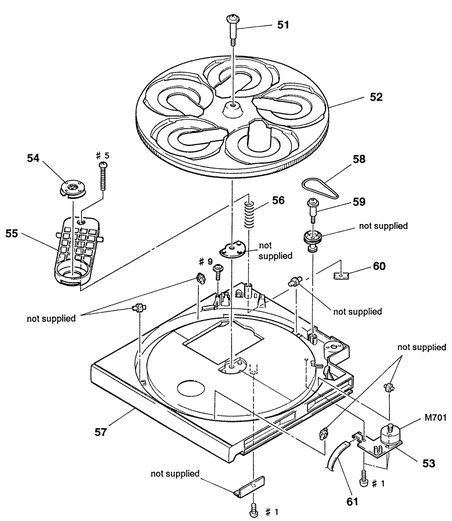
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. FRONT PANEL AND CASE ASSEMBLIES



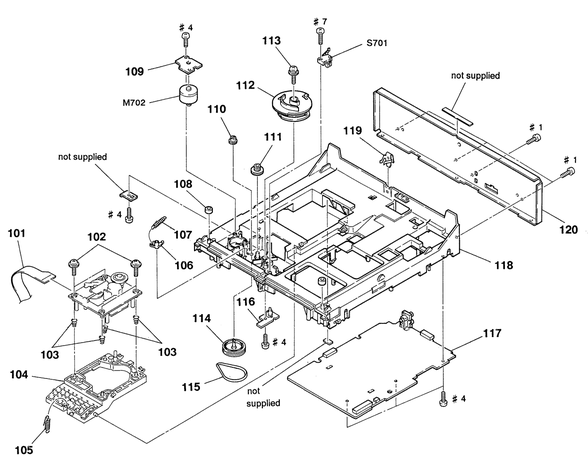
Ref.No.	Part No.	Description	Remark
1	A-4660-027-A	PANEL ASSY, FRONT (US) (Mexican)	
1	A-4660-028-A	PANEL ASSY, FRONT (Canadian)	
* 2	1-642-720-11	RECEIVE BOARD	
* 3	A-4649-175-A	DISPLAY BOARD, COMPLETE	
4	1-590-835-11	WIRE, FLAT TYPE (34 CORE)	
* 5	4-944-153-01	CASE	
6	3-363-099-01	SCREW (CASE) (M3X8)	
7	3-703-865-21	SCREW (+BV 3X8)	
8	X-4942-199-1	FOOT ASSY	
9	4-923-836-11	CUSHION	
10	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	

5-2. DISC TRAY ASSEMBLY



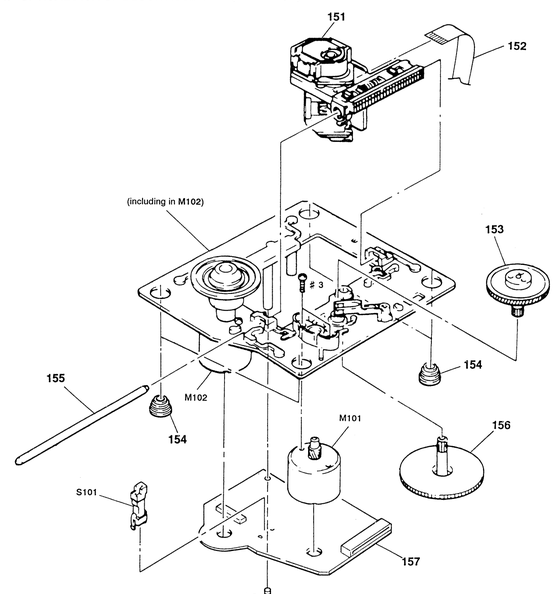
Ref.No.	Part No.	Description	Remark
51	4-926-384-01	SCREW, STEP	
* 52	4-926-383-21	TABLE (B), DISK	
* 53	1-638-729-11	TABLE MOTOR BOARD	
* 54	1-452-538-11	MAGNET	
* 55	4-930-506-02	BRACKET (PRESS PULLEY)	
56	4-926-395-01	SPRING, COMPRESSION	
* 57	4-944-160-11	TABLE (A), DISC (Canadian)	
* 57	4-944-160-41	TABLE (A), DISC (US) (Mexican)	
58	4-926-359-01	BELT	
59	4-923-597-01	SCREW, STEP	
* 60	4-926-388-01	BRACKET (ADJUSTMENT)	
61	1-590-849-11	WIRE, FLAT TYPE (5 CORE)	
M701	A-4604-849-A	MOTOR ASSY, ROTARY (TABLE)	

5-3. CHASSIS ASSEMBLY



Ref.No.	Part No.	Description	Remark
101	1-535-892-11	JUMPER, FILM (WITH TERMINAL)	
102	4-933-134-01	SCREW (+PTPWH M2.6X6)	
103	4-949-385-11	SPRING (D), COIL	
* 104	4-934-373-01	BRACKET (BU)	
105	4-937-911-01	SPRING, TENSION	
106	4-917-519-11	LEVER, SET	
107	4-924-412-01	SPRING (B), TENSION	
* 108	4-951-619-01	CUSHION (A)	
* 109	1-639-288-11	LOADING MOTOR BOARD	
110	4-934-375-01	GEAR (LOADING B)	
111	4-934-381-01	GEAR (LOADING C)	
112	4-934-391-01	GEAR (LOADING A)	
113	4-926-317-01	SCREW, STEP	
114	X-4941-529-1	PULLEY ASSY	
115	4-944-490-01	BELT (TIMING)	
* 116	1-638-731-11	OPEN/UP SW BOARD	
* 117	A-4649-177-A	MAIN BOARD, COMPLETE	
* 118	4-943-997-01	CHASSIS	
* 119	4-943-996-01	SPRING, LEAF	
* 120	4-944-632-31	PANEL, BACK	
M702	A-4604-847-A	MOTOR ASSY, LOADING	
S701	1-572-713-11	SWITCH, PUSH (WITH CONNECTOR) (DOWN)	

5-4. OPTICAL PICK-UP BLOCK ASSEMBLY (BU-5BD3/M)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description	Remark
⚠151	8-848-144-11	DEVICE, OPTICAL KSS-240A	
152	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
153	4-917-567-01	GEAR (M)	
154	4-933-126-01	INSULATOR (A)	
155	4-917-565-01	SHAFT, SLED	
156	4-917-564-01	GEAR (P), FLATNESS	
157	A-4617-908-A	BD BOARD, COMPLETE	
M101	X-4917-504-1	MOTOR ASSY (SLED)	
M102	X-4917-523-3	BASE (OUTSERT) ASSY (SPINDLE MOTOR)	
S101	1-572-085-11	SWITCH, LEAF (LIMIT IN)	

SECTION 6
ELECTRICAL PARTS LIST

BD

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Color Indication of Appearance Parts Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ Parts color ↑ Cabinet's color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH
- Canadian model is abbreviated as CND, and also Mexican model is MX.

Ref. No.	Part No.	Description			Remark
*	A-4617-908-A	BD BOARD, COMPLETE			
		**********			
		〈 CAPACITOR 〉			
C101	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C102	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C103	1-126-163-11	ELECT	4.7uF	20%	50V
C104	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C105	1-126-154-11	ELECT	47uF	20%	6.3V
C106	1-126-154-11	ELECT	47uF	20%	6.3V
C107	1-126-154-11	ELECT	47uF	20%	6.3V
C108	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C109	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C110	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C111	1-131-367-00	TANTALUM	22uF	10%	20V
C112	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C113	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C114	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C115	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C117	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C118	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C119	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C120	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C151	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C152	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C153	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C154	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C155	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C171	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C172	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C173	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C174	1-163-038-00	CERAMIC CHIP	0.1uF		25V
		〈 CONNECTOR 〉			
CN101	1-568-796-11	SOCKET, CONNECTOR 22P			
CN102	1-568-795-11	SOCKET, CONNECTOR 12P			
		〈 IC 〉			
IC101	8-752-053-73	IC CXA1372AQ			
IC102	8-759-822-36	IC LA6532M			
		〈 JACK 〉			
J101	1-216-295-00	METAL CHIP	0	5%	1/10W
J102	1-216-295-00	METAL CHIP	0	5%	1/10W
		〈 TRANSISTOR 〉			
Q101	8-729-901-01	TRANSISTOR DTC144EK			
		〈 RESISTOR 〉			
R101	1-216-097-00	METAL CHIP	100K	5%	1/10W
R102	1-216-095-00	METAL CHIP	82K	5%	1/10W
R103	1-216-091-00	METAL CHIP	56K	5%	1/10W
R104	1-216-099-00	METAL CHIP	120K	5%	1/10W
R105	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R106	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R107	1-216-114-00	METAL GLAZE	510K	5%	1/10W
R108	1-216-105-00	METAL CHIP	220K	5%	1/10W
R109	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R110	1-216-049-00	METAL CHIP	1K	5%	1/10W
R111	1-216-049-00	METAL CHIP	1K	5%	1/10W
R112	1-216-083-00	METAL CHIP	27K	5%	1/10W
R113	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R114	1-216-105-00	METAL CHIP	220K	5%	1/10W
R152	1-216-073-00	METAL CHIP	10K	5%	1/10W
R153	1-216-085-00	METAL CHIP	33K	5%	1/10W
R154	1-216-085-00	METAL CHIP	33K	5%	1/10W
R155	1-216-093-00	METAL CHIP	68K	5%	1/10W
R156	1-216-081-00	METAL CHIP	22K	5%	1/10W
R157	1-216-079-00	METAL CHIP	18K	5%	1/10W
R158	1-216-079-00	METAL CHIP	18K	5%	1/10W
R159	1-216-079-00	METAL CHIP	18K	5%	1/10W
R160	1-216-049-00	METAL CHIP	1K	5%	1/10W
R171	1-216-001-00	METAL CHIP	10	5%	1/10W
R172	1-216-001-00	METAL CHIP	10	5%	1/10W
R173	1-216-001-00	METAL CHIP	10	5%	1/10W
R174	1-216-001-00	METAL CHIP	10	5%	1/10W

BD MAIN DISPLAY RECEIVE

Ref. No.	Part No.	Description			Remark
		〈 VARIABLE RESISTOR 〉			
RV101	1-238-016-11	RES, ADJ, CARBON 10K			
RV102	1-238-016-11	RES, ADJ, CARBON 10K			
		〈 SWITCH 〉			
S101	1-572-085-11	SWITCH, LEAF (LIMIT)			
**********					
*	A-4649-177-A	MAIN BOARD, COMPLETE			
		**********			
*	A-4649-175-A	DISPLAY BOARD, COMPLETE			
		**********			
*	1-642-720-11	RECEIVE BOARD			
		**********			
*	4-875-327-01	HEAT SINK			
	7-682-547-04	SCREW +BVTT 3X6 (S)			
		〈 CAPACITOR 〉			
C204	1-124-556-11	ELECT	2200uF	20%	16V
C205	1-124-927-11	ELECT	4.7uF	20%	100V
C206	1-124-907-11	ELECT	10uF	20%	50V
C207	1-124-907-11	ELECT	10uF	20%	50V
C208	1-124-472-11	ELECT	470uF	20%	10V
C209	1-124-472-11	ELECT	470uF	20%	10V
C210	1-126-176-11	ELECT	220uF	20%	10V
C211	1-124-471-00	ELECT	1000uF	20%	6.3V
C213	1-164-159-11	CERAMIC	0.1uF		50V
C301	1-124-477-11	ELECT	47uF	20%	25V
C302	1-164-159-11	CERAMIC	0.1uF		50V
C303	1-164-159-11	CERAMIC	0.1uF		50V
C304	1-164-159-11	CERAMIC	0.1uF		50V
C311	1-136-161-00	FILM	0.047uF	5%	50V
C312	1-161-374-11	CERAMIC	0.0015uF	20%	50V
C313	1-161-494-00	CERAMIC	0.022uF		25V
C314	1-162-306-11	CERAMIC	0.01uF	20%	16V
C315	1-124-902-00	ELECT	0.47uF	20%	50V
C316	1-161-494-00	CERAMIC	0.022uF		25V
C320	1-164-159-11	CERAMIC	0.1uF		50V
C321	1-164-159-11	CERAMIC	0.1uF		50V
C331	1-162-208-31	CERAMIC	24PF	5%	50V
C336	1-124-477-11	ELECT	47uF	20%	25V
C342	1-124-477-11	ELECT	47uF	20%	25V
C343	1-164-159-11	CERAMIC	0.1uF		50V
C349	1-164-159-11	CERAMIC	0.1uF		50V
C350	1-124-477-11	ELECT	47uF	20%	25V
C351	1-161-494-00	CERAMIC	0.022uF		25V
C353	1-162-196-31	CERAMIC	5.6PF	10%	50V
C354	1-162-196-31	CERAMIC	5.6PF	10%	50V
C355	1-164-159-11	CERAMIC	0.1uF		50V
C356	1-124-477-11	ELECT	47uF	20%	25V
C357	1-161-772-11	CERAMIC	0.1uF	10%	25V
C362	1-162-280-31	CERAMIC	82PF	10%	50V
C363	1-162-213-31	CERAMIC	39PF	5%	50V
C364	1-162-213-31	CERAMIC	39PF	5%	50V
C365	1-162-213-31	CERAMIC	39PF	5%	50V
C366	1-162-213-31	CERAMIC	39PF	5%	50V
C367	1-162-280-31	CERAMIC	82PF	10%	50V
C371	1-130-479-00	MYLAR	0.0047uF	5%	50V
C372	1-130-479-00	MYLAR	0.0047uF	5%	50V
C373	1-130-472-00	MYLAR	0.0012uF	5%	50V
C374	1-130-472-00	MYLAR	0.0012uF	5%	50V
C375	1-126-176-11	ELECT	220uF	20%	10V
C376	1-126-176-11	ELECT	220uF	20%	10V
C377	1-124-477-11	ELECT	47uF	20%	25V
C378	1-124-477-11	ELECT	47uF	20%	25V
C380	1-123-382-00	ELECT	3.3uF	20%	100V
C381	1-123-382-00	ELECT	3.3uF	20%	100V
C382	1-124-122-11	ELECT	100uF	20%	50V
C383	1-124-927-11	ELECT	4.7uF	20%	100V
C401	1-124-477-11	ELECT	47uF	20%	25V
C402	1-164-159-11	CERAMIC	0.1uF		50V
C403	1-126-101-11	ELECT	100uF	20%	16V
C404	1-126-101-11	ELECT	100uF	20%	16V
C408	1-164-159-11	CERAMIC	0.1uF		50V
C409	1-164-159-11	CERAMIC	0.1uF		50V
C414	1-164-159-11	CERAMIC	0.1uF		50V
C425	1-162-294-31	CERAMIC	0.001uF	10%	50V
C426	1-162-294-31	CERAMIC	0.001uF	10%	50V
C427	1-162-294-31	CERAMIC	0.001uF	10%	50V
C428	1-162-294-31	CERAMIC	0.001uF	10%	50V
C429	1-162-294-31	CERAMIC	0.001uF	10%	50V

MAIN **DISPLAY** **RECEIVE**

Ref.No.	Part No.	Description			Remark
C430	1-162-294-31	CERAMIC	0.001uF	10%	50V
C431	1-162-294-31	CERAMIC	0.001uF	10%	50V
C432	1-162-294-31	CERAMIC	0.001uF	10%	50V
C440	1-124-907-11	ELECT	10uF	20%	50V
C441	1-124-907-11	ELECT	10uF	20%	50V
C442	1-126-233-11	ELECT	22uF	20%	50V
C551	1-161-494-00	CERAMIC	0.022uF		25V
		〈 CONNECTOR 〉			
* CN301	1-573-046-11	SOCKET, CONNECTOR 18P			
* CN401	1-573-080-11	SOCKET, CONNECTOR (34P, L TYPE)			
* CN402	1-568-943-11	PIN, CONNECTOR 5P			
* CN403	1-568-824-11	SOCKET, CONNECTOR 5P			
* CN404	1-568-943-11	PIN, CONNECTOR 5P			
CN408	1-691-637-11	PIN, CONNECTOR 9P			
* CN501	1-573-080-11	SOCKET, CONNECTOR (34P, L TYPE)			
		〈 DIODE 〉			
D208	8-719-109-89	DIODE	RD5.6ES-B2		
D209	8-719-987-63	DIODE	1N4148M		
D351	8-719-987-63	DIODE	1N4148M		
		〈 FILTER 〉			
FL501	1-519-655-11	FLUORESCENT INDICATOR			
		〈 IC 〉			
IC202	8-759-630-21	IC	M5290P-16		
IC204	8-759-604-86	IC	M5F7807		
IC301	8-752-337-26	IC	CXD2500AQ		
IC302	8-752-342-65	IC	CXD2560M		
IC303	8-752-349-01	IC	CXD2561AM		
IC306	8-759-503-91	IC	TL082ACP		
IC307	8-759-945-58	IC	RC4558P		
IC401	8-752-836-23	IC	CXP50116-279Q		
IC402	8-759-821-32	IC	CXA1291P		
IC551	8-749-920-83	IC	GP1U52XB		
		〈 JACK 〉			
J381	1-569-442-11	JACK, PIN 2P (LINE OUT)			

Ref.No.	Part No.	Description				Remark
		〈 COIL 〉				
L331	1-408-403-00	INDUCTOR	3.3uH			
L332	1-412-473-21	INDUCTOR	0uH			
L334	1-410-521-11	INDUCTOR	100uH			
L335	1-410-336-11	INDUCTOR	220uH			
L336	1-410-521-11	INDUCTOR	100uH			
L337	1-410-521-11	INDUCTOR	100uH			
L338	1-408-080-00	INDUCTOR	100uH			
L339	1-408-080-00	INDUCTOR	100uH			
		〈 TRANSISTOR 〉				
Q202	8-729-119-78	TRANSISTOR	2SC2785-HFE			
Q203	8-729-141-83	TRANSISTOR	2SB1094-LK			
Q204	8-729-900-61	TRANSISTOR	DTA114ES			
Q205	8-729-900-89	TRANSISTOR	DTC144ES			
Q206	8-729-900-89	TRANSISTOR	DTC144ES			
Q210	8-729-900-61	TRANSISTOR	DTA114ES			
Q211	8-729-900-80	TRANSISTOR	DTC114ES			
Q341	8-729-900-65	TRANSISTOR	DTA144ES			
Q342	8-729-900-65	TRANSISTOR	DTA144ES			
Q343	8-729-900-65	TRANSISTOR	DTA144ES			
Q344	8-729-900-89	TRANSISTOR	DTC144ES			
Q373	8-729-141-30	TRANSISTOR	2SC3623A-LK			
Q374	8-729-141-30	TRANSISTOR	2SC3623A-LK			
Q375	8-729-119-78	TRANSISTOR	2SC2785-HFE			
Q376	8-729-119-78	TRANSISTOR	2SC2785-HFE			
Q401	8-729-900-89	TRANSISTOR	DTC144ES			
		〈 RESISTOR 〉				
R204	1-249-425-11	CARBON	4.7K	5%	1/4W	
R205	1-249-425-11	CARBON	4.7K	5%	1/4W	
R208	1-249-423-11	CARBON	3.3K	5%	1/4W	
R209	1-249-413-11	CARBON	470	5%	1/4W	
R301	1-249-417-11	CARBON	1K	5%	1/4W	
R302	1-249-417-11	CARBON	1K	5%	1/4W	
R303	1-249-417-11	CARBON	1K	5%	1/4W	
R311	1-249-423-11	CARBON	3.3K	5%	1/4W	
R312	1-249-429-11	CARBON	10K	5%	1/4W	
R313	1-249-423-11	CARBON	3.3K	5%	1/4W	
R314	1-249-429-11	CARBON	10K	5%	1/4W	
R315	1-249-417-11	CARBON	1K	5%	1/4W	

MAIN DISPLAY RECEIVE

Ref. No.	Part No.	Description				Remark
R316	1-249-417-11	CARBON	1K	5%	1/4W	
R317	1-249-420-11	CARBON	1.8K	5%	1/4W	
R318	1-249-441-11	CARBON	100K	5%	1/4W	
R321	1-249-417-11	CARBON	1K	5%	1/4W	
R322	1-249-417-11	CARBON	1K	5%	1/4W	
R323	1-249-417-11	CARBON	1K	5%	1/4W	
R324	1-249-417-11	CARBON	1K	5%	1/4W	
R330	1-249-417-11	CARBON	1K	5%	1/4W	
R331	1-249-417-11	CARBON	1K	5%	1/4W	
R342	1-249-417-11	CARBON	1K	5%	1/4W	
R343	1-249-441-11	CARBON	100K	5%	1/4W	
R344	1-249-441-11	CARBON	100K	5%	1/4W	
R345	1-249-425-11	CARBON	4.7K	5%	1/4W	
R346	1-249-425-11	CARBON	4.7K	5%	1/4W	
R347	1-249-441-11	CARBON	100K	5%	1/4W	
R348	1-249-429-11	CARBON	10K	5%	1/4W	
R351	1-249-436-11	CARBON	39K	5%	1/4W	
R352	1-249-436-11	CARBON	39K	5%	1/4W	
R353	1-249-436-11	CARBON	39K	5%	1/4W	
R354	1-249-436-11	CARBON	39K	5%	1/4W	
R355	1-249-436-11	CARBON	39K	5%	1/4W	
R356	1-249-436-11	CARBON	39K	5%	1/4W	
R357	1-249-436-11	CARBON	39K	5%	1/4W	
R358	1-249-436-11	CARBON	39K	5%	1/4W	
R359	1-247-903-00	CARBON	1M	5%	1/4W	
R361	1-249-432-11	CARBON	18K	5%	1/4W	
R362	1-249-432-11	CARBON	18K	5%	1/4W	
R363	1-249-432-11	CARBON	18K	5%	1/4W	
R364	1-249-432-11	CARBON	18K	5%	1/4W	
R365	1-249-438-11	CARBON	56K	5%	1/4W	
R366	1-249-438-11	CARBON	56K	5%	1/4W	
R367	1-249-438-11	CARBON	56K	5%	1/4W	
R368	1-249-438-11	CARBON	56K	5%	1/4W	
R369	1-249-419-11	CARBON	1.5K	5%	1/4W	
R370	1-249-419-11	CARBON	1.5K	5%	1/4W	
R371	1-249-419-11	CARBON	1.5K	5%	1/4W	
R372	1-249-419-11	CARBON	1.5K	5%	1/4W	
R373	1-247-887-00	CARBON	220K	5%	1/4W	
R374	1-247-887-00	CARBON	220K	5%	1/4W	
R375	1-249-426-11	CARBON	5.6K	5%	1/4W	
R376	1-249-426-11	CARBON	5.6K	5%	1/4W	
R377	1-247-862-11	CARBON	20K	5%	1/4W	
R378	1-247-862-11	CARBON	20K	5%	1/4W	
R381	1-249-425-11	CARBON	4.7K	5%	1/4W	
R382	1-249-425-11	CARBON	4.7K	5%	1/4W	
R401	1-249-433-11	CARBON	22K	5%	1/4W	
R402	1-249-433-11	CARBON	22K	5%	1/4W	
R403	1-249-433-11	CARBON	22K	5%	1/4W	
R404	1-249-425-11	CARBON	4.7K	5%	1/4W	
R405	1-249-425-11	CARBON	4.7K	5%	1/4W	
R406	1-249-425-11	CARBON	4.7K	5%	1/4W	
R407	1-249-433-11	CARBON	22K	5%	1/4W	
R408	1-249-441-11	CARBON	100K	5%	1/4W	
R409	1-247-864-11	CARBON	24K	5%	1/4W	
R410	1-247-880-11	CARBON	110K	5%	1/4W	
R411	1-249-440-11	CARBON	82K	5%	1/4W	
R412	1-247-876-11	CARBON	75K	5%	1/4W	
R413	1-249-440-11	CARBON	82K	5%	1/4W	
R414	1-247-874-11	CARBON	62K	5%	1/4W	
R415	1-249-435-11	CARBON	33K	5%	1/4W	
R416	1-247-878-00	CARBON	91K	5%	1/4W	
R421	1-249-393-11	CARBON	10	5%	1/4W	
R422	1-249-393-11	CARBON	10	5%	1/4W	
R425	1-249-429-11	CARBON	10K	5%	1/4W	
R426	1-249-429-11	CARBON	10K	5%	1/4W	
R427	1-249-429-11	CARBON	10K	5%	1/4W	
R428	1-249-429-11	CARBON	10K	5%	1/4W	
R429	1-249-429-11	CARBON	10K	5%	1/4W	
R430	1-249-429-11	CARBON	10K	5%	1/4W	
R431	1-249-429-11	CARBON	10K	5%	1/4W	
R432	1-249-429-11	CARBON	10K	5%	1/4W	
R501	1-249-422-11	CARBON	2.7K	5%	1/4W	
R502	1-249-424-11	CARBON	3.9K	5%	1/4W	
R503	1-249-427-11	CARBON	6.8K	5%	1/4W	
R504	1-249-432-11	CARBON	18K	5%	1/4W	
R505	1-249-422-11	CARBON	2.7K	5%	1/4W	
R506	1-249-424-11	CARBON	3.9K	5%	1/4W	
R507	1-249-427-11	CARBON	6.8K	5%	1/4W	
R508	1-249-432-11	CARBON	18K	5%	1/4W	
R509	1-249-422-11	CARBON	2.7K	5%	1/4W	
R551	1-249-422-11	CARBON	2.7K	5%	1/4W	
R552	1-249-424-11	CARBON	3.9K	5%	1/4W	
R553	1-249-427-11	CARBON	6.8K	5%	1/4W	

MAIN | DISPLAY | RECEIVE

TABLE MOTOR | LOADING MOTOR | OPEN/UP SW

Ref. No.	Part No.	Description				Remark
R554	1-249-432-11	CARBON	18K	5%	1/4W	
R555	1-249-422-11	CARBON	2.7K	5%	1/4W	
R556	1-249-424-11	CARBON	3.9K	5%	1/4W	
R557	1-249-427-11	CARBON	6.8K	5%	1/4W	
		〈 SWITCH 〉				
S501	1-554-303-21	SWITCH, TACTILE (▶▶|)				
S502	1-554-303-21	SWITCH, TACTILE (|◀◀)				
S503	1-554-303-21	SWITCH, TACTILE (■)				
S504	1-554-303-21	SWITCH, TACTILE (OPEN/CLOSE)				
S505	1-554-303-21	SWITCH, TACTILE (DISC SKIP)				
S506	1-554-303-21	SWITCH, TACTILE (EDIT/TIME FADE)				
S507	1-554-303-21	SWITCH, TACTILE (▶▶)				
S508	1-554-303-21	SWITCH, TACTILE (◀◀)				
S509	1-554-303-21	SWITCH, TACTILE (▶)				
S510	1-554-303-21	SWITCH, TACTILE (▮▮)				
S511	1-554-303-21	SWITCH, TACTILE (TIME)				
S512	1-554-303-21	SWITCH, TACTILE (REPEAT)				
S551	1-554-303-21	SWITCH, TACTILE (DISC 1)				
S552	1-554-303-21	SWITCH, TACTILE (DISC 2)				
S553	1-554-303-21	SWITCH, TACTILE (DISC 3)				
S554	1-554-303-21	SWITCH, TACTILE (DISC 4)				
S555	1-554-303-21	SWITCH, TACTILE (DISC 5)				
S556	1-554-303-21	SWITCH, TACTILE (CONTINUE)				
S557	1-554-303-21	SWITCH, TACTILE (SHUFFLE)				
S558	1-554-303-21	SWITCH, TACTILE (PROGRAM)				
S559	1-554-303-21	SWITCH, TACTILE (PEAK SEARCH)				
		〈 CRYSTAL 〉				
X351	1-567-965-11	VIBRATOR, CRYSTAL (22.5MHz)				
**********						
	1-638-729-11	TABLE MOTOR BOARD				
		**********				
*	1-639-288-11	LOADING MOTOR BOARD				
		**********				
	1-638-731-11	OPEN/UP SW BOARD				
		**********				

Ref. No.	Part No.	Description				Remark
		〈 CAPACITOR 〉				
C705	1-161-375-00	CERAMIC	0.0022uF	20%	50V	
		〈 CONNECTOR 〉				
* CN705	1-566-214-11	PIN, CONNECTOR (PC BOARD) 2P				
* CN707	1-573-044-11	SOCKET, CONNECTOR 5P				
		〈 DIODE 〉				
D701	8-719-970-19	DIODE GP-1A521				
		〈 RESISTOR 〉				
R701	1-249-416-11	CARBON	820	5%	1/4W	
		〈 SWITCH 〉				
S702	1-571-300-21	SWITCH, ROTARY (OPEN/UP)				
**********						
		MISCELLANEOUS				
		**********				
4	1-590-835-11	WIRE, FLAT TYPE (34 CORE)				
* 54	1-452-538-11	MAGNET				
61	1-590-849-11	WIRE, FLAT TYPE (5 CORE)				
101	1-535-892-11	JUMPER, FILM (WITH TERMINAL)				
⚠151	8-848-144-11	DEVICE, OPTICAL KSS-240A				
152	1-575-001-11	WIRE, FLAT TYPE (12 CORE)				
M101	X-4917-504-1	MOTOR ASSY (SLED)				
M102	X-4917-523-3	BASE (OUTSERT) ASSY (SPINDLE MOTOR)				
M701	A-4604-849-A	MOTOR ASSY, ROTARY (TABLE)				
M702	A-4604-847-A	MOTOR ASSY, LOADING				
S701	1-572-713-11	SWITCH, PUSH (WITH CONNECTOR) (DOWN)				
**********						
		ACCESSORIES & PACKING MATERIALS				
		**********				
	4-937-945-01	PLATE (TRANSPORT), LOCK				
*	4-945-044-01	CUSHION (FRONT)				
*	4-945-045-01	CUSHION (LOWER)				
**********						

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
		HARDWARE LIST	
		************	
#1	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	
#2	7-682-548-04	SCREW +BVTT 3X8 (S)	
#3	7-621-255-15	SCREW +P 2X3	
#4	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#5	7-682-554-04	SCREW +B 3X25	
#6	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S	
#7	7-685-136-19	SCREW +P 2.6X12 TYPE2 NON-SLIT	
#8	7-682-547-04	SCREW +BVTT 3X6 (S)	
#9	7-685-648-79	SCREW (M3X12), TAPPING	

9-956-958-11

Sony Corporation
Audio Group

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HST-231

SERVICE MANUAL

US Model
Canadian Model
Mexican Model

This set is the tuner deck and amplifier section in SEN-231CD

Model Name Using Similar Mechanism	HST-221
Tape Transport Mechanism Type	TCM-180VW-H5

SPECIFICATIONS

AUDIO POWER SPECIFICATIONS

POWER OUTPUT AND TOTAL HARMONIC DISTORTION:

With 8-ohm loads, both channels driven, from 70 - 20,000 Hz; rated 100 watts per channel minimum RMS power, with less than 0.9% total harmonic distortion from 250 milliwatts to rated output.

Amplifier

Frequency response PHONO: RIAA curve
CD, VIDEO: 10 Hz – 50 kHz ±3 dB

Input

	Sensitivity	Impedance
PHONO	2.5 mV	50 kilohms
CD, VIDEO	250 mV	50 kilohms

Output SPEAKER: Accepts speakers of 8 to 16 ohms
HEADPHONES: Accepts headphones with low and high impedance

GRAPHIC EQUALIZER controls
Boost/Cut range: ±8 dB (100 Hz, 330 Hz, 1 kHz, 3.3kHz)
±6 dB (10 kHz)

Tuner

System FM stereo, FM/AM superheterodyne tuner
Quartz-locked PLL digital synthesizer system

FM tuner section

Tuning range 87.5 – 108 MHz
Antenna terminals 75 ohms unbalanced
300 ohms balanced
Intermediate frequency 10.7 MHz
Sensitivity (at 50 dB quieting)
22.1 dBf, 7 µV (mono),
42.1 dBf, 70 µV (stereo)
Usable sensitivity 19.5 dBf, 5 µV (IHF)
Signal-to-noise ratio (at 75 kHz deviation)
80 dB (mono),
75 dB (stereo) at 1 kHz
Separation 35 dB at 1 kHz
Selectivity 55 dB at 400 kHz
Harmonic distortion 0.3% (mono),
0.5% (stereo) at 1 kHz

— Continued on page 2 —

STEREO COMPONENT SYSTEM

SONY®

AM tuner section

Tuning range	530 – 1,710 kHz
Antenna	AM loop antenna, External antenna terminal
Intermediate frequency	450 kHz
Usable sensitivity	AM loop antenna: 500 µV/m (1,000 kHz)
Signal-to-noise ratio	54 dB
Harmonic distortion	0.5%
Selectivity	38 dB (10 kHz)

Tape Deck

System	4-track 2-channel stereo
Frequency response (DOLBY NR OFF)	
	With TYPE II cassette (Sony UCX-S): 30 – 14,000 Hz (±3 dB)
	With TYPE I cassette (Sony HF-S): 30 – 13,000 Hz (±3 dB)
Wow and flutter	0.12% WRMS (NAB)

General

Power requirements	120 V AC, 60 Hz
Power consumption	190 W

HST-231

Dimensions	Approx. 430 x 330 x 300 mm (w/h/d) ($17 \times 12^{7}/_{8} \times 11^{7}/_{8}$ inches) (including projecting parts and controls)
Weight	Approx. 8.8 kg (19 lb 7 oz) net
Accessories supplied	AM loop antenna (1) FM wire antenna (1) Remote Commander RM-S102 (1) Sony batteries SUM-3(NS) (2) Audio signal connecting cord (phono plug x 2 ⟷ phono plug x 2) (1) SYSTEM CONTROL cord (1)

Design and specifications are subject to change without notice.

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SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer: Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage, Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

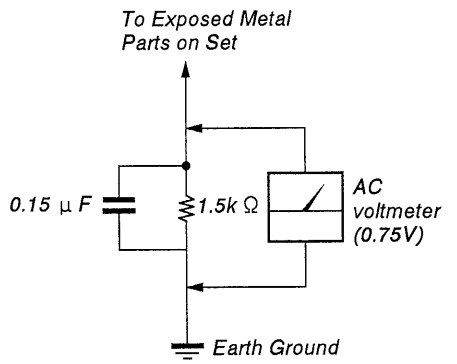


Fig. A. Using an AC voltmeter to check AC leakage.

Adjusting the Audio

The following operations apply only to reproduced sound.

Volume Adjustment

To increase the sound level, turn the VOLUME control clockwise.
To decrease it , turn the control counterclockwise.

Note
When listening with headphones connected to the HEADPHONES jack, no sound can be heard from the speaker system.

Sound Quality Adjustment

To adjust tone quality
Adjust the 5-BAND STEREO GRAPHIC EQUALIZER controls according to:
- Personal preference
- The room acoustics. For instance, playback in a room with padded walls or furniture will probably sound better with the high frequencies boosted.
- Program quality. If reproduction contains hiss, cutting the higher frequencies will improve playback.

Function of the graphic equalizer controls
100 Hz: Boosts or cuts bass.
330 Hz: Adjusts the power, spaciousness and warmth of the sound.
1 kHz: Provides more presence for vocals.
3.3 kHz: Boosts a brighter sound or reduces stridency.
10 kHz: Highlights the delicate quality of instrumental sound.

Balance Adjustment

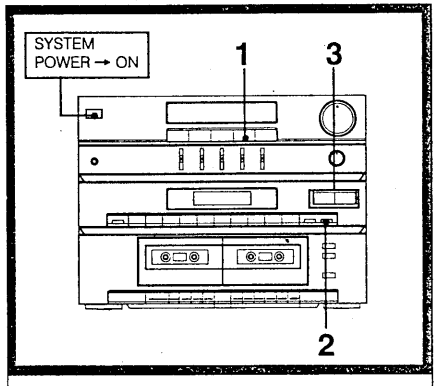
To change relative strength of the right and left speaker outputs, adjust the BALANCE control.

For personal listening
Connect headphones to the HEADPHONES jack.

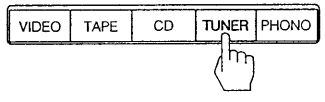
Receiving Broadcasts

This section describes about the various ways of tuning which are very convenient.
Before reception, be sure to connect the supplied AM and FM antenna.

Tuning in Automatically

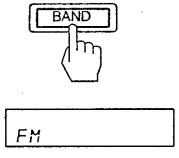


1 Press TUNER.



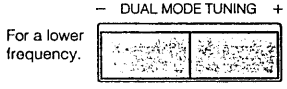
The CD player is automatically turned off in the TUNER mode.

2 Press BAND to select FM or AM.



Receiving Broadcasts

3 Keep pressing TUNING – or + for about 3 seconds.



When a station is received automatic tuning stops.

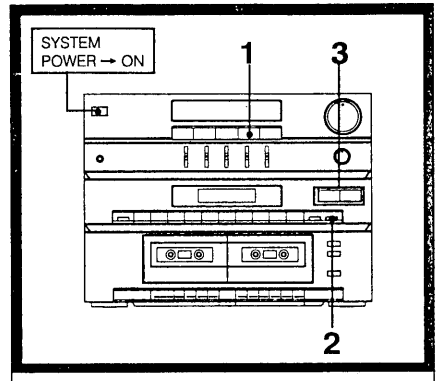
4 Repeat step 3 until the desired station is received.

Indicators in the display window
- "TUNED" appears when a station is tuned in.
- "STEREO" appears when an FM stereo program of sufficient signal strength is received.

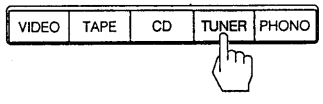
To change the AM tuning interval
The AM tuning interval is preset at the factory to 10 kHz to match the frequency allocation system of your country. To change the interval to 9 kHz, proceed as follows.
1 Press the SYSTEM POWER switch to turn on the unit.
2 Set the BAND selector to AM.
3 Disconnect the AC plug from the AC outlet to turn off the unit.
4 While pressing the "+" TUNING button, connect the AC plug to the AC outlet again and then turn on the unit.
To reset the interval to 10 kHz, follow the same procedure.

Note
When the interval is changed, all stored stations will be erased from the memory. After changing the interval, be sure to store the stations again.

Tuning in Manually

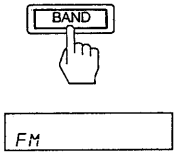


1 Press TUNER.

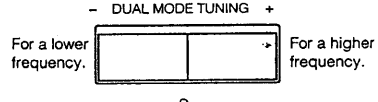


The CD player is automatically turned off in the TUNER mode.

2 Press BAND to select FM or AM.



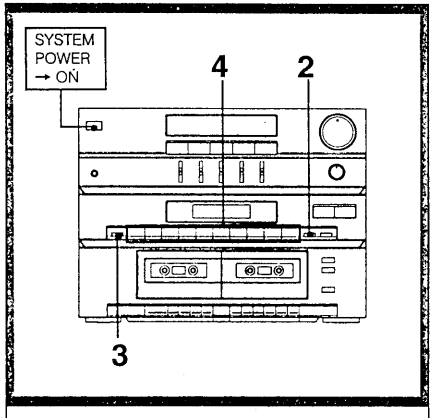
3 Press TUNING – or + to select the station.



This section is extracted from instruction manual.

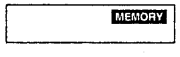
Storing Station Frequencies into Memory

Up to 10 stations can be stored in any order for each memory page (A, B, C). Therefore, 30 stations can be stored in total.



1 **Tune in a desired station. (See pages 7 to 8.)**

2 **Press MEMORY.**

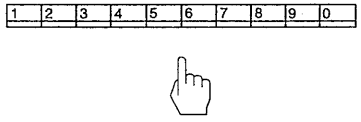


3 **While "MEMORY" appears on the display, press SHIFT to select the memory page (A, B or C).**

A - 1, A - 2, ... A - 0
B - 1, ... B - 0
C - 1, ... C - 9, C - 0

Each time SHIFT is pressed, A, B or C is indicated cyclically.

4 **While MEMORY appears, press the desired number.**



If you cannot store a station successfully
You can store a station only while "MEMORY" appears on the display.
If "MEMORY" has gone off, press MEMORY again.

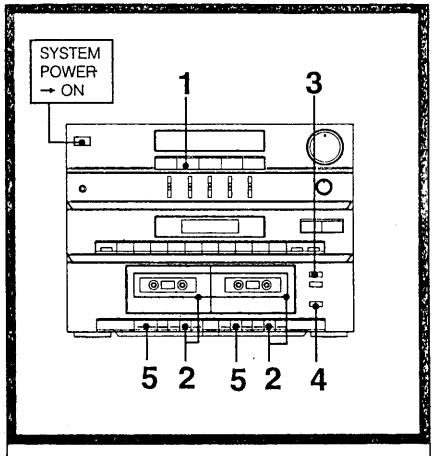
How long does a station remain stored?
Storing a new station erases the previously stored one.

Tuning in a Stored Station

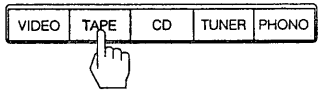
1 Press TUNER.
The CD player is automatically turned off in the TUNER mode.
2 Press SHIFT.
3 Designate the number with the numeric buttons.

Playing Back Tapes (on either Deck A or B)

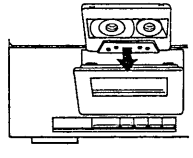
This section describes about a basic playback operation on either deck A or B.



1 **Press TAPE.**

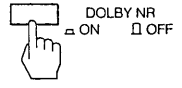


2 **Open the cassette compartment and insert the tape with the side to be played back facing you.**

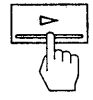


3 **Press TAPE SELECTOR to select the tape type.**

4 **Press DOLBY NR to select the DOLBY NR setting.**



5 **Press ▷ to start playback.**



When the tape ends, playback automatically stops.

To stop playback, rewind or fast forward, press ■ ⏏.
To pause, press II.
To resume playback, press II again.
To rewind the tape, press ◄◄.
To fast-forward the tape, press ►►.

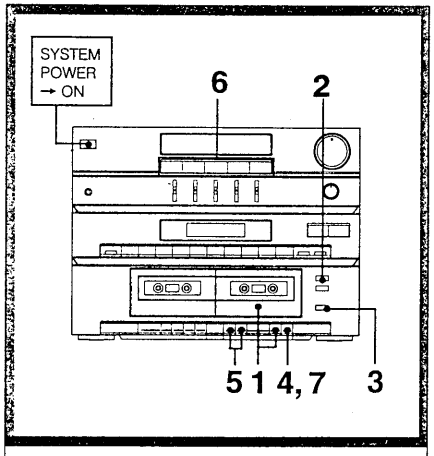
Notes
- When both decks A and B are in playback mode, only playback from deck A will be audible.
- During playback or recording on a deck, do not operate the other deck.
- Before turning the power off, be sure to release ▷ or ● by pressing ■ ⏏. Otherwise, the tape may become entangled when the power is turned on again.

What is the Dolby NR* system?
Dolby NR (noise reduction) system reduces tape hiss noise in low-level, high-frequency signals. The system boosts these signals in recording and lowers them in playback. When listening to a tape recorded with Dolby NR, set the DOLBY NR switch to ON.

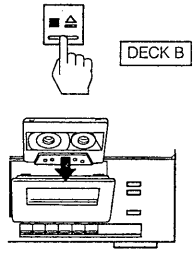
* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol DD are trademarks of Dolby Laboratories Licensing Corporation.

Recording on Tapes (Deck B)

This section describes about the recording operation only on deck B.

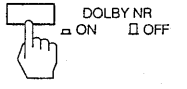


1 **Open the cassette compartment and insert the tape with the side to be recorded facing you.**



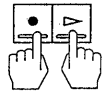
2 **Press TAPE SELECTOR to select the tape type.**

3 **Press DOLBY NR to select the DOLBY NR setting.**



4 **Press II.**

5 **Press ● and ▷ together to set the unit in recording pause mode.**



6 **Play the desired program source to be recorded.**

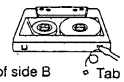
7 **Press II to start recording.**

To stop recording, press ■ ⏏.

Notes

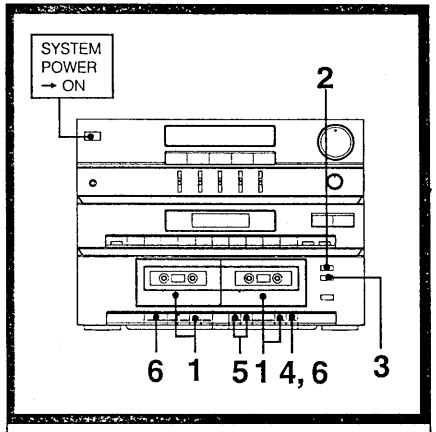
- The recording level is automatically adjusted during recording.
- In the recording mode on deck B, do not operate deck A.

To prevent accidental erasure

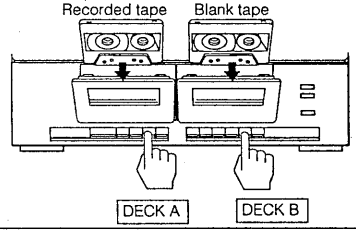
To protect side A recording	To reuse a cassette
Break off the tab of side A. Side A  Tab of side B ○ Tab of side A	Cover the opening with plastic tape.

Dubbing Tapes (from Deck A to B)

This section describes about the operation of the recording from deck A to B.



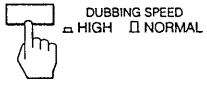
1 **Press ■ ⏏ to open the cassette compartment and insert the tapes with the sides to be played back or recorded facing you.**



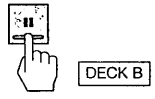
2 **Press TAPE SELECTOR to select the tape type.**

Be sure to use tapes of the same type for dubbing, since the switch setting is effective on both decks.

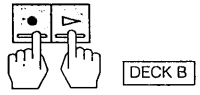
3 **Press DUBBING SPEED to select the dubbing speed.**



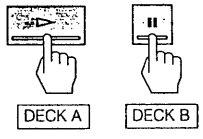
4 **Press II.**



5 **Press ● and ▷ together to set the unit in recording pause mode.**



6 **Press ▷ on deck A and II on deck B together.**



To stop dubbing, press ■ ⏏ on both decks.

Notes

- The tape in deck B is automatically recorded with the same recording system as the original tape in deck A. So it is unnecessary to select DOLBY NR.
- Do not change the setting of the DUBBING SPEED switch during tape dubbing.
- If the sound is affected by a television set during high-speed dubbing, turn off the set or move it away from the unit.

How to edit the tape

1 During normal-speed dubbing, press II on deck B.
2 Locate the desired portion to be dubbed with ►► or ◄◄ on deck A. Then press ■ ⏏. Or replace the cassette with a new one.
3 Press ▷ on deck A and release II on deck B to start dubbing again.

SECTION 2
ADJUSTMENTS

2-1. MECHANICAL ADJUSTMENTS

PRECAUTIONS

1. Clean the following parts with a denatured-alcohol-moistened swab:

record/playback heads	pinch rollers
erase heads	rubber belts
capstan	idlers

2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

Mode	Torque meter	Meter reading
FWD	CQ-102C	30 – 70 g•cm (0.42 – 0.97 oz•inch)
FWD back tention	CQ-102C	1 – 5 g•cm (0.014 to 0.063 oz•inch)
FF, REW	CQ-201B	70 – 160 g•cm (0.97 – 2.21 oz•inch)

2-2. ELECTRICAL ADJUSTMENTS

0dB = 0.775V (AF)
0dB = 0.1 μ V (RF)

CASSETTE DECK SECTION

- The adjustments should be performed in the order given in this service manual. (As a general rule, playback circuit adjustment should be completed before performing recording circuit adjustment.)
- The adjustments should be performed for both L-CH and R-CH.
- Switches and controls should be set as follows unless otherwise specified.

DOLBY NR switch : OFF
TAPE : TYPE I

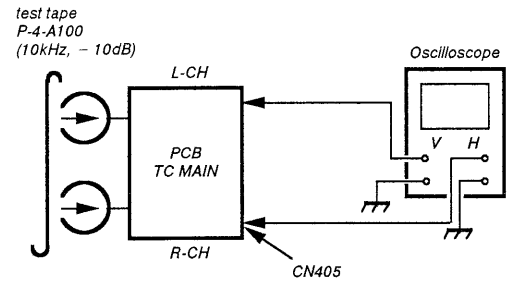
Type	Signal	Used for
P-4-A100	6.3kHz, – 10dB	Azimath Adjustment
P-4-L300	315Hz, 0dB	PB Level Adjustment
WS-48B	3kHz, 0dB	Tape Speed Adjustment

Record/Playback Head Azimuth Adjustment

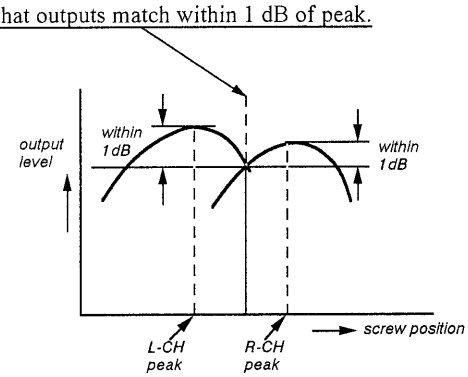
Note : Perform this adjustments for both decks.

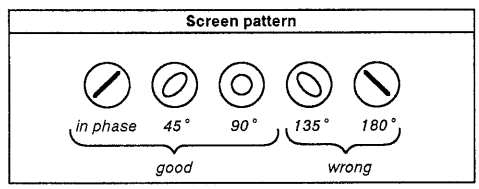
Procedure :

1. Mode : FWD playback



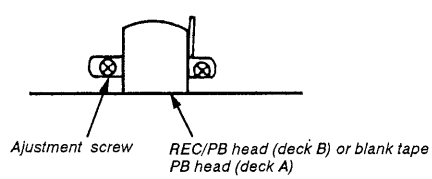
2. Turn the adjustment screw and check output peaks. If the peaks do not match for L-CH and R-CH, turn the adjustment screw so that outputs match within 1 dB of peak.





3. After the adjustments, apply suitable locking compound to the parts adjusted.

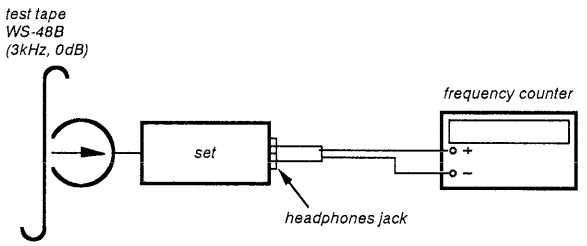
Adjustment Location :



Tape Speed Adjustment

Procedure :

Mode : playback



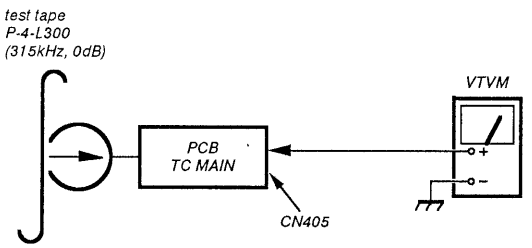
- High speed adjustment
  1. Short pin CN407. Then at HIGH speed mode.
  2. Adjust RV505 so that the frequency counter reads 6,000 ± 20Hz.
     (Must be first adjustment B deck)

- NORMAL speed adjustment
  1. Remove the short pin from CN407. Then at NORMAL speed mode.
  2. Adjust RV504 so that the frequency counter reads 3,000 ± 10Hz.
     (See page 9 for Adjustment Location)

Playback Level Adjustment

Procedure :

Mode : FWD playback



DECK-A side RV400 (L-CH), RV500 (R-CH)
DECK-B side RV401 (L-CH), RV501(R-CH)
so that the limits below are satisfied.

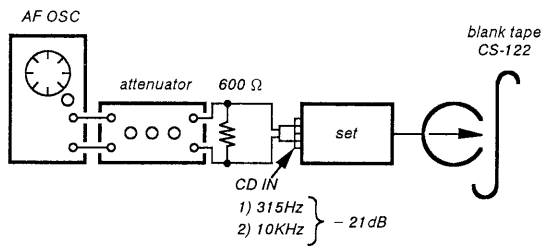
Adjustable limits :

CN405 level : − 2.7dB ± 0.5
level difference between the channels : within 1.0dB
(See page 9 for Adjustment Location)

Record BIAS Adjustment

Procedure :

1. Mode : record



2. Mode : Playback
   (1) Supply a − 21dB signal (315Hz) from the CD IN, Adjust the VOLUME control so that a − 30dB signal is output to the headphones terminal.
   (2) Insert alignment tape CS-122 into deck B and put the set into the REC mode.
   (3) Adjust the signal frequency to 10kHz.
   (4) Put the set into the PB mode and adjust RV403 (L-CH) and RV503 (R-CH) in the REC mode so that the level difference between 315Hz and 10kHz is within 0 ± 0.5dB.
   (5) Repeatedly put the set into the REC and PB modes two to four times and adjust the bias.

Adjustable limits :

The HEADPHONES level of 10kHz signal relative to that of 315Hz : 0dB ± 0.5dB
(See page 9 for Adjustment Location)

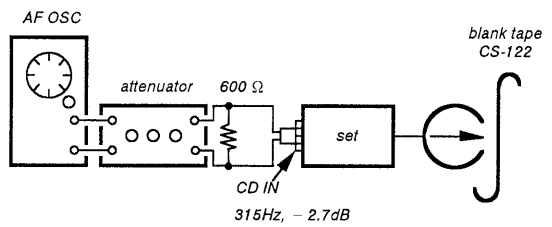
Record Level Adjustment

Setting :

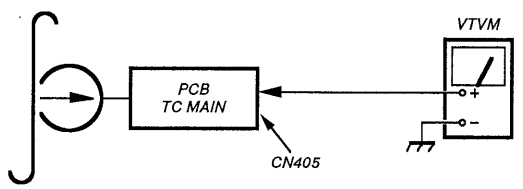
TAPE : TYPE I

Procedure :

1. Mode : record



2. Mode : playback

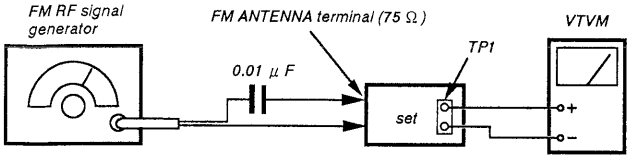


(1) Supply a − 2.7dB signal (315Hz) from the CD terminal.
(2) Insert alignment tape CS-122 into deck B and record the signal. Then playback the recorded portion of the tape and adjust RV402 (L-CH) and RV502 (R-CH) so that the − 2.7dB signal output is obtained at TP1 terminal.

TUNER SECTION

As FM FRONT-END FE1 is difficult to repair if faulty, replace it with new one.

FM NULL Adjustment

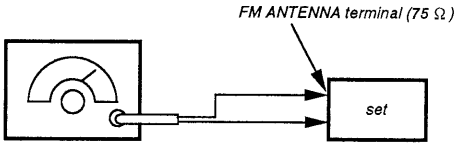


Carrier frequency : 98MHz
Output level : 1mV (60dB μ)
Modulation : 1kHz, 75Hz deviation

Procedure :

1. Tune the set to 98MHz.
2. Adjust T21 for 0V reading on the VTVM.

FM Tuned Level Adjustment

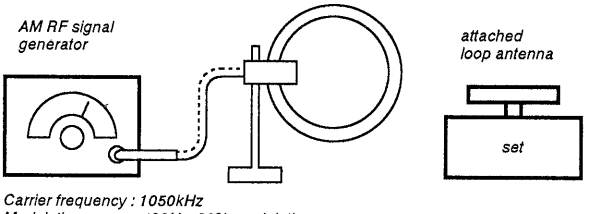


Carrier frequency : 98MHz
Output level : 0.018mV (25dB μ)
Modulation : 1kHz, 75Hz deviation

Procedure :

1. Tune the set to 98MHz.
2. Adjust RV24 to the point where "TUNED" sign on FL101 just turns light.

• AM SECTION



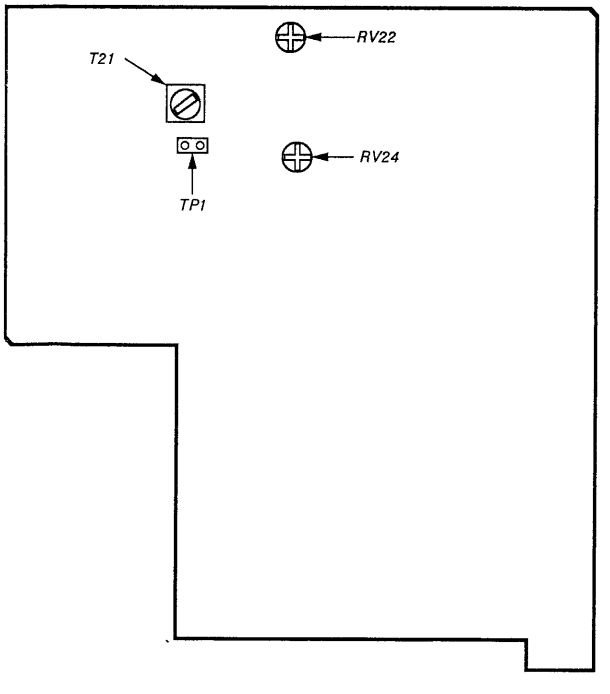
Carrier frequency : 1050kHz
Modulation : 400Hz, 30% modulation

AM Tuned Level Adjustment

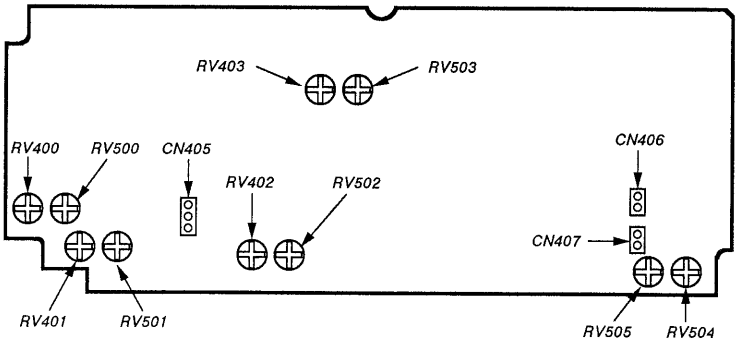
1. Set loop antenna input level to 0.56mV (55dB) and no signal tuned light should not on.
2. Tune the set to 1050kHz.
3. Adjust RV22 to the point where "TUNED" sign on FL101 just turns light.

Adjustment Location :

MAIN BOARD (Component side)

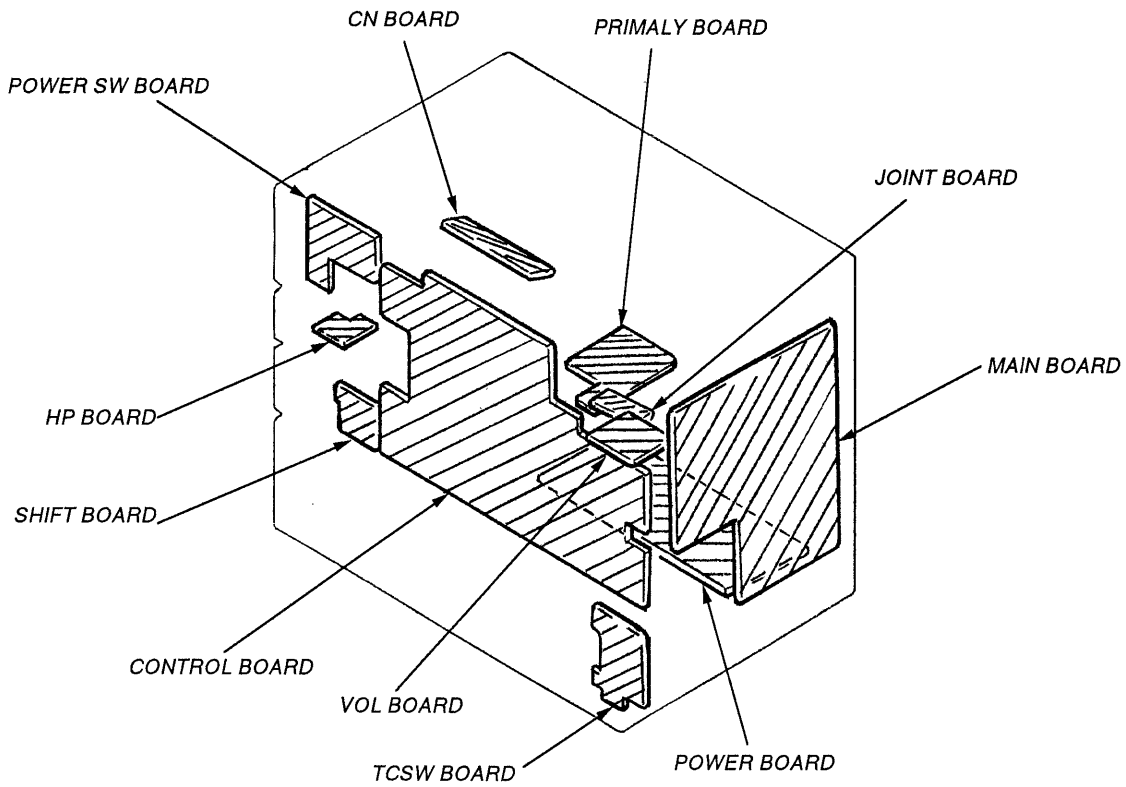


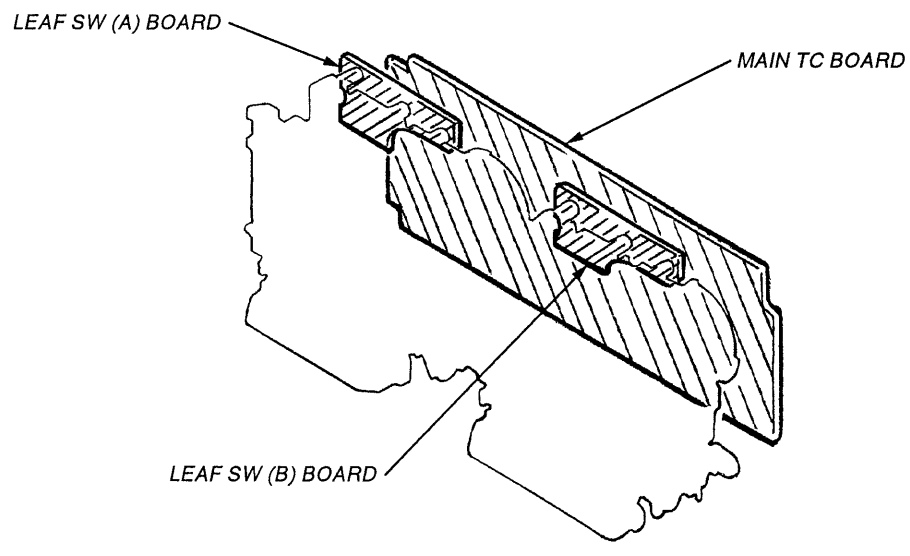
MAIN TC BOARD (Conductor side)



SECTION 3
DIAGRAMS

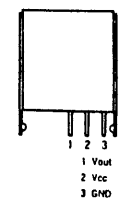
3-1. CIRCUIT BOARDS LOCATION





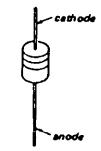
- **Semiconductor Lead Layouts.**

GP1U52XB

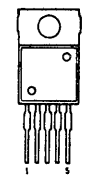


2SA733-QP
2SC945-P
2SC1815-Y
2SC1841-PAFAEA
2SC3112-B

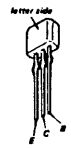
11ES2
1SS120
UZL-27H



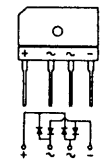
L78MR06



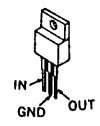
2SA1175-HFE
2SC2785-HFE



RBV-602-01

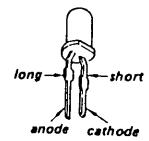


M5F7807L
M5F7810L

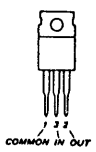


2SC2669-OY
2SC3622A-LK
DTA114ES
DTA124ES
DTA144ES
DTC114ES
DTC124ES
DTC144ES

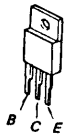
UZ-3.9BSB
UZP-5.6B



M5F7907L

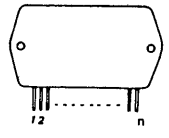


2SD2012



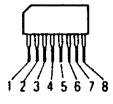
RBA-402

STK-4231MK2



2SK246-GR3

UPC1237HA



3-2. PRINTED WIRING BOARDS – MAIN SECTION –

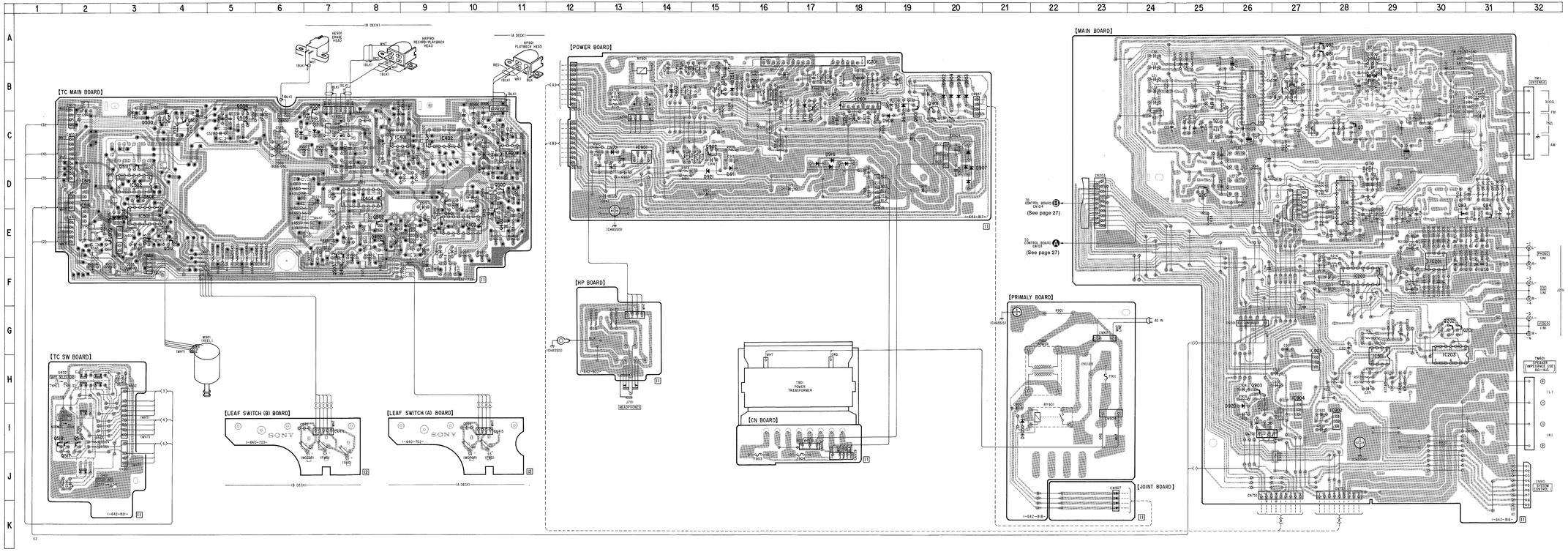
● Refer to page 11 for Semiconductor Lead Layouts.

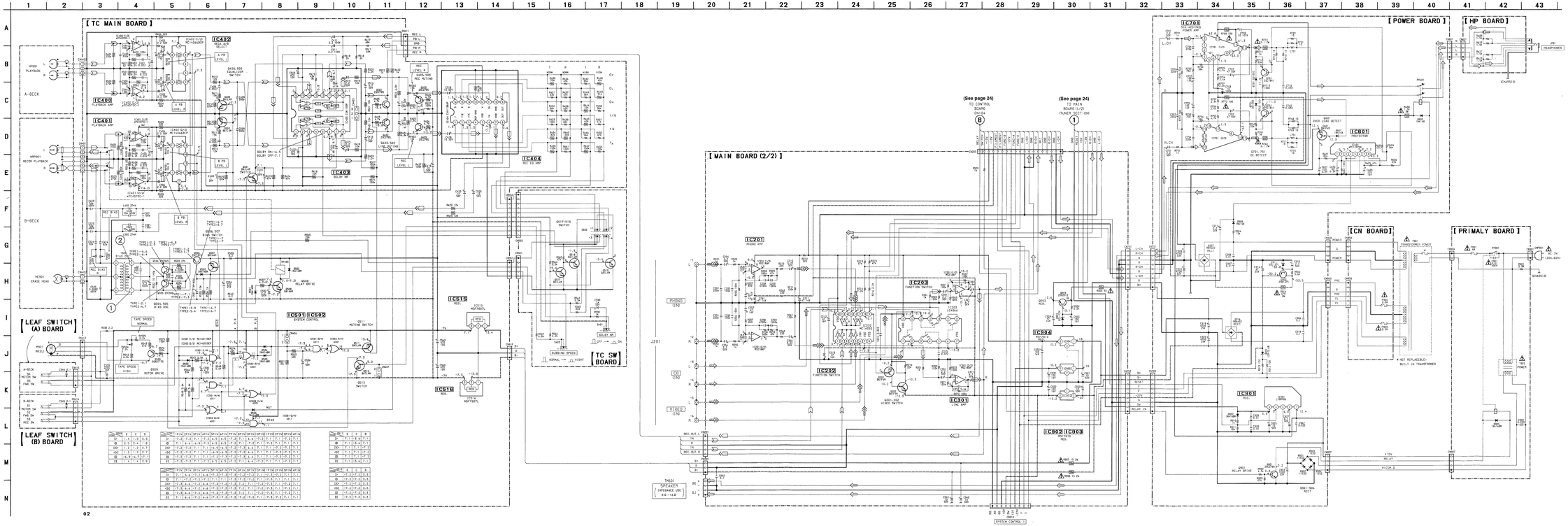
● SEMICONDUCTOR LOCATION

Ref. No.	Location	Ref. No.	Location
D500	C – 3	IC601	B – 18
D501	C – 6	IC701	A – 18
D502	C – 7	IC901	C – 13
D503	E – 3	IC902	I – 28
D504	E – 3	IC903	H – 27
		IC904	I – 27
D505	E – 3		
D506	D – 3		
D601	B – 19	Q3	C – 28
D602	B – 14	Q26	D – 25
D701	B – 17	Q81	A – 28
		Q82	A – 28
D751	B – 15	Q83	E – 30
D901	B – 20		
D902	B – 20	Q84	E – 31
D903	B – 20	Q201	G – 30
D904	B – 20	Q202	G – 30
		Q400	E – 11
D905	I – 21	Q401	D – 9
D907	D – 20		
D908	C – 19	Q402	E – 8
D911	D – 15	Q403	F – 7
D916	D – 17	Q500	D – 11
		Q502	E – 8
D920	I – 26	Q503	F – 7
D921	D – 15		
D922	C – 13	Q504	C – 5
		Q505	C – 5
		Q506	C – 4
IC21	B – 26	Q507	C – 4
IC81	D – 28	Q508	C – 7
IC201	F – 30		
IC202	F – 28	Q509	E – 2
IC203	H – 30	Q511	D – 3
		Q512	E – 4
IC301	H – 29	Q517	I – 2
IC400	C – 11	Q518	I – 1
IC401	C – 8		
IC402	C – 9	Q519	I – 2
IC403	E – 10	Q601	B – 19
		Q701	B – 17
IC404	D – 8	Q751	B – 15
IC501	E – 3	Q901	B – 19
IC502	D – 3		
IC515	D – 2	Q902	C – 15
IC516	E – 2	Q903	H – 28

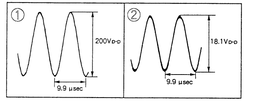
Note :

- ◇—: parts extracted from the component side.
- ▒▒▒: Pattern on the side which is seen.
- ▒▒▒: Pattern of the rear side.
- [ ]: printed resistor.





● WAVE FORM



Note :

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- : nonflammable resistor.
- : printed resistor.

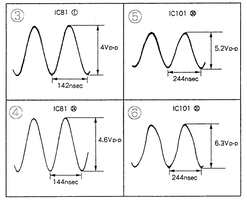
Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- : B+ Line
- : B– Line
- : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : PLAY
  ( ) : REC
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  : FM

3-4. SCHEMATIC DIAGRAM – PANEL SECTION –

● Refer to page 30 for IC Block Diagrams.

● WAVE FORM

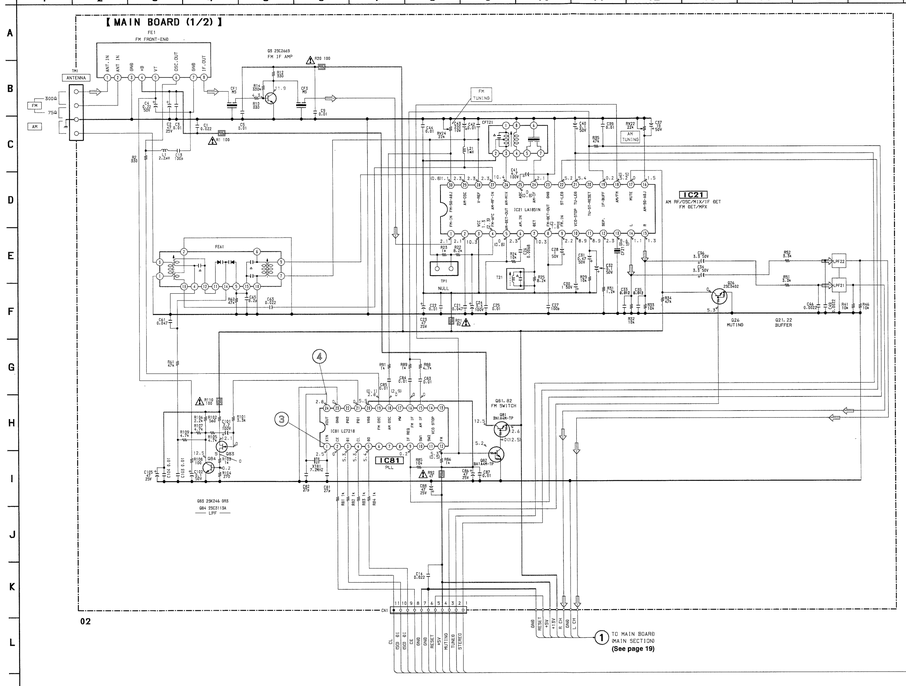


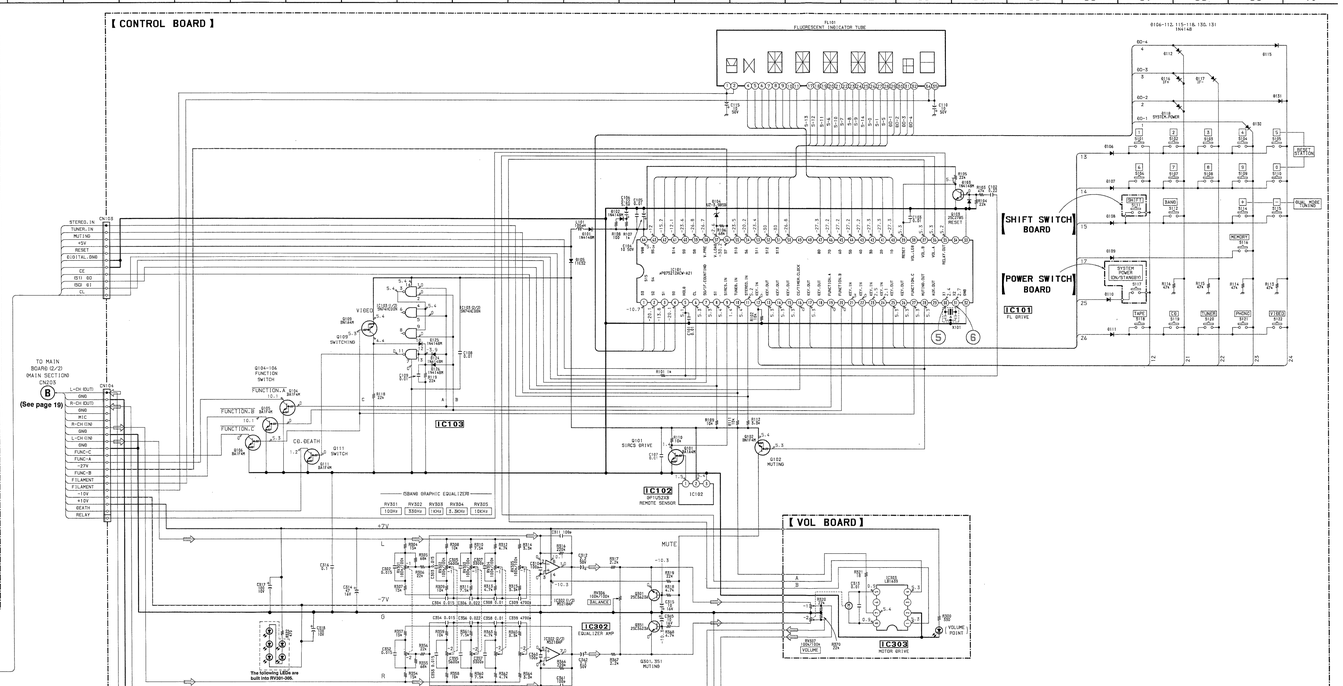
Note :

- All capacitors are in μF unless otherwise noted. pF : μμF
  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- ▭▭ : nonflammable resistor.

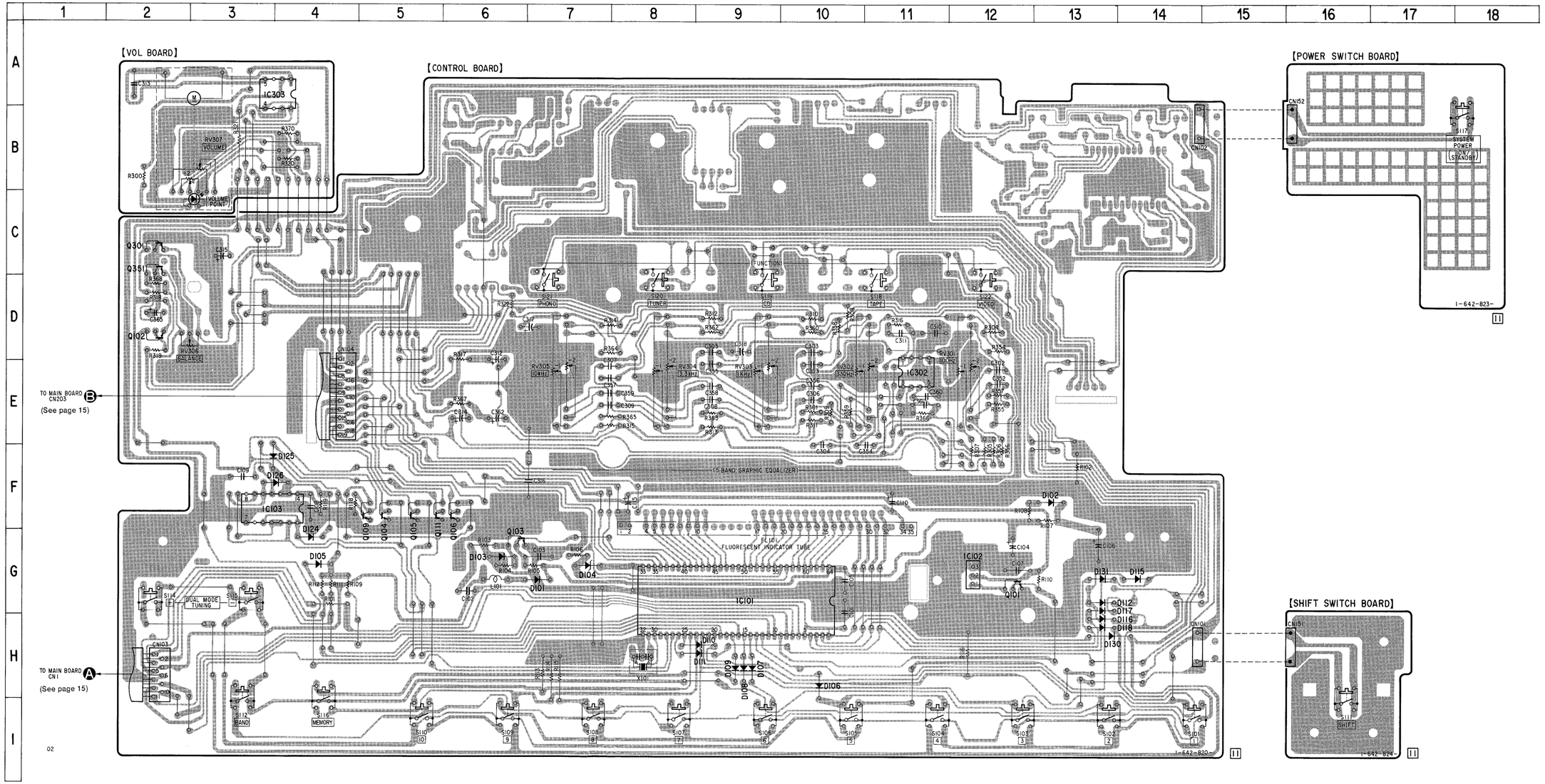
Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- ▭▭▭ : B+ Line
- ▭ ▭ ▭ : B− Line
- ▭ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : FM
  ( ) : AM
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : FM





3-5. PRINTED WIRING BOARDS – PANEL SECTION – ● Refer to page 11 for Semiconductor Lead Layouts.



● SEMICONDUCTOR LOCATION

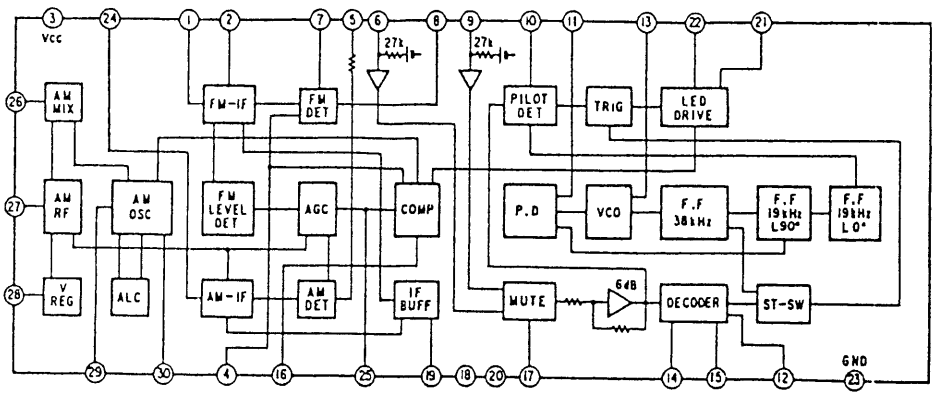
Ref. No.	Location
D101	G – 7
D102	F – 13
D103	G – 6
D104	G – 7
D105	G – 4
D106	H – 10
D107	H – 9
D108	H – 9
D109	H – 9
D110	H – 9
D111	H – 9
D112	G – 13
D115	G – 14
D116	H – 13
D117	G – 13
D118	H – 13
D124	G – 4
D125	F – 4
D126	F – 4
D130	H – 13
D131	G – 13
IC101	G – 9
IC102	G – 12
IC103	F – 3
IC302	E – 11
IC303	A – 4
Q101	G – 12
Q102	D – 2
Q103	G – 6
Q104	F – 5
Q105	F – 5
Q106	F – 6
Q109	F – 5
Q111	F – 5
Q301	C – 2
Q351	C – 2

Note :

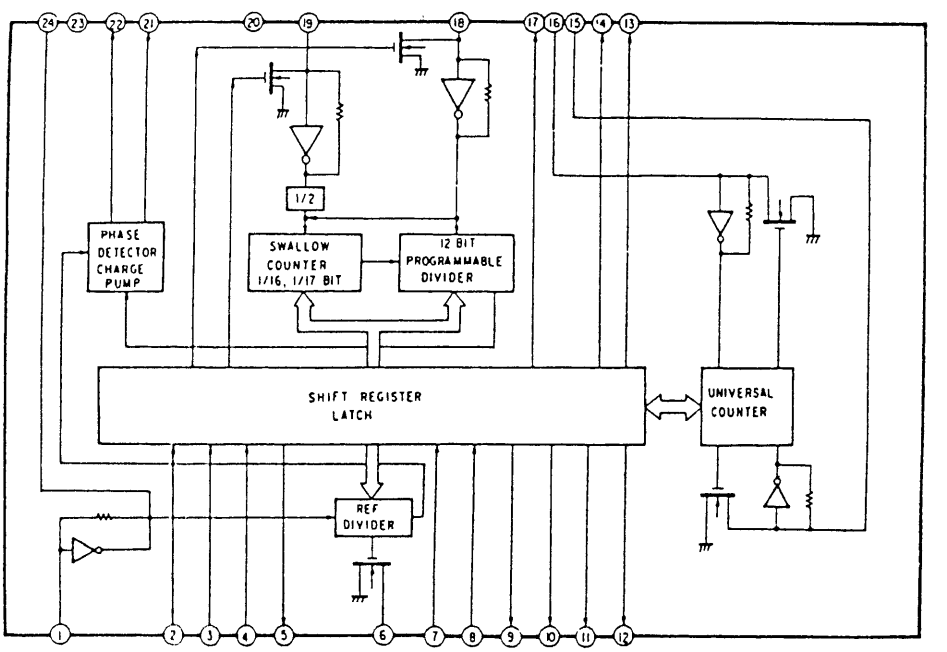
- ○— : parts extracted from the component side.
- ▒▒ : Pattern on the side which is seen.

3-6. IC BLOCK DIAGRAMS

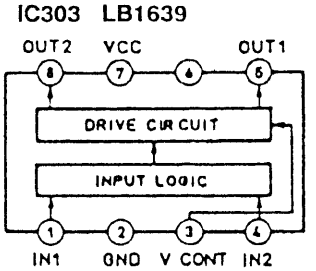
IC21 LA1851N



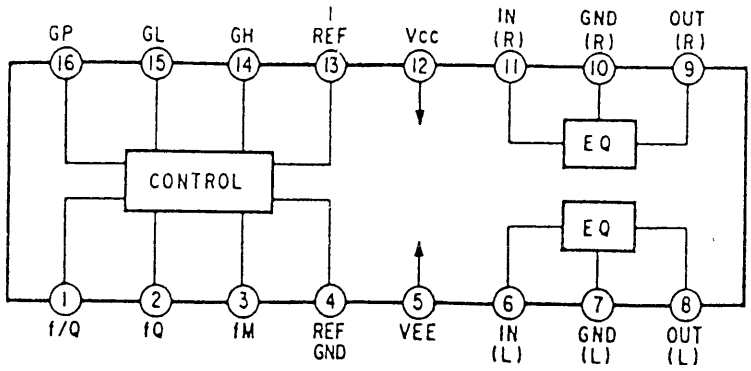
IC81 LC7218



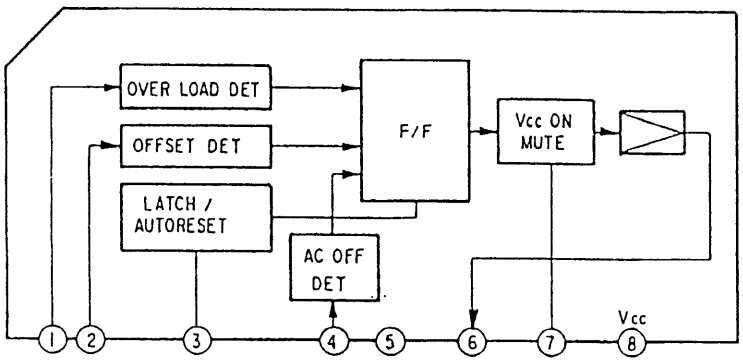
IC303 LB1639



IC404 CXA1198AP



IC601 μPC1237HA



SECTION 4
EXPLODED VIEWS

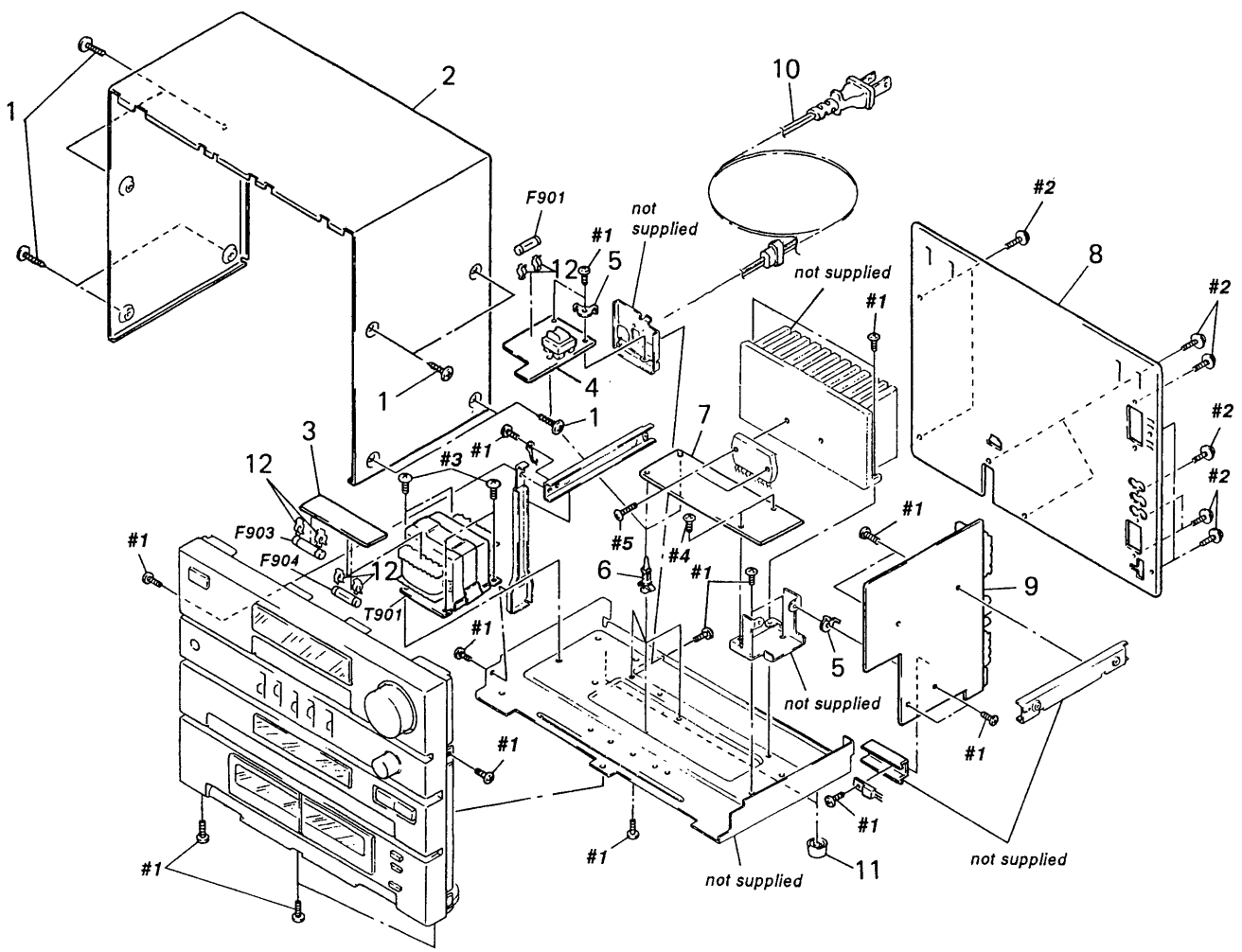
NOTE :

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Color indication of Appearance Parts Example :
  KNOB, BALANCE (WHITE)....(RED)
  ↑ ↑
  Parts color Cabinet's color
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark)list is given in the last of this parts list.
- MX : Mexican

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

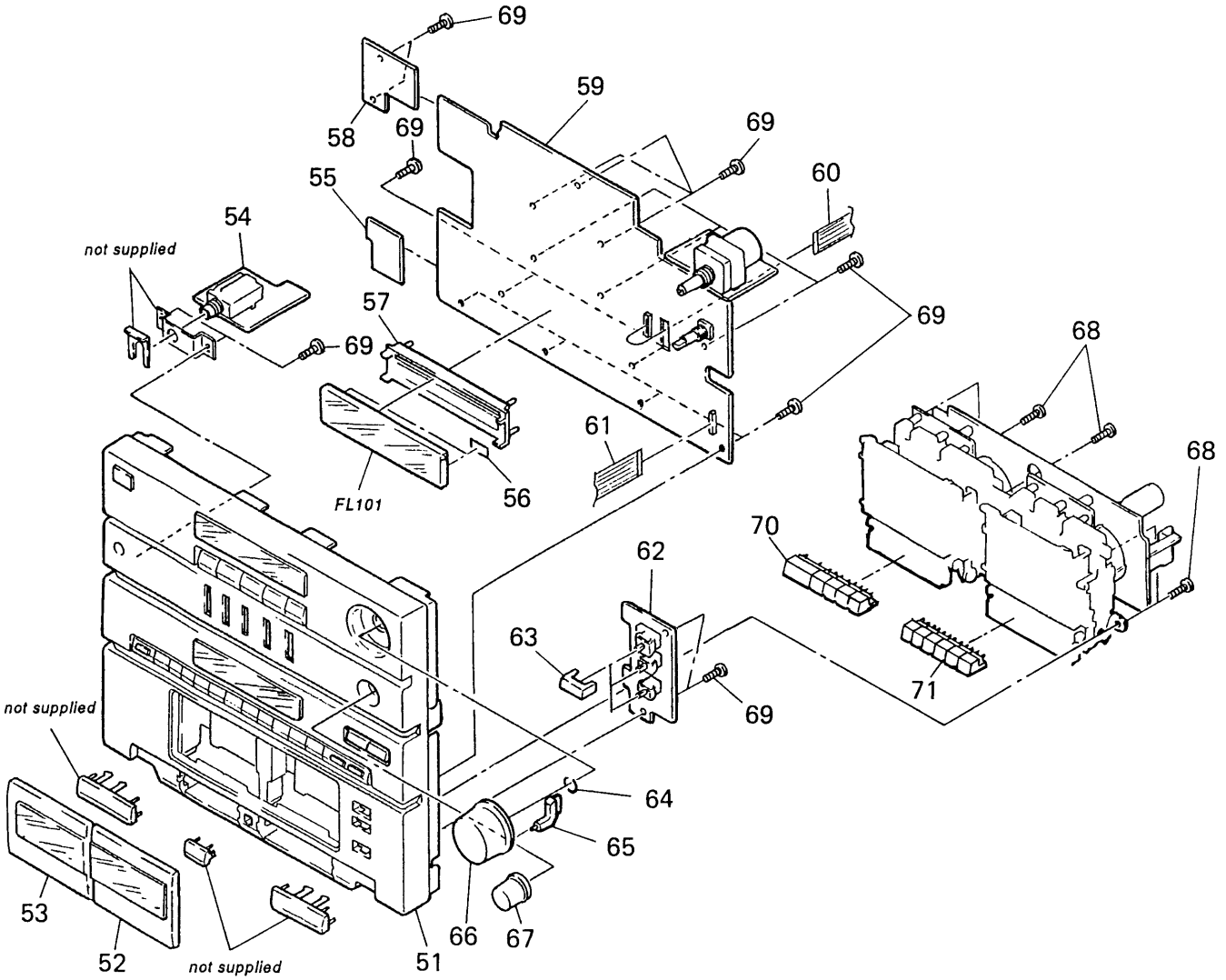
4-1. CABINET SECTION



Ref.No.	Part No.	Description	Remark
1	3-363-099-01	SCREW (CASE +3X8 TP2)	
* 2	4-949-627-11	CASE	
* 3	1-642-819-11	CN BOARD	
* 4	1-642-818-11	PRIMALY BOARD	
* 5	4-942-204-01	PLATE, GROUND	
* 6	3-346-265-11	HOLDER, PC BOARD	
* 7	A-4347-117-A	POWER BOARD, COMPLETE	
* 8	4-949-534-61	PANEL, BACK (US)	
* 8	4-949-534-71	PANEL, BACK (Canadian)	
* 8	4-949-534-81	PANEL, BACK (MX)	

Ref.No.	Part No.	Description	Remark
* 9	A-4347-113-A	MAIN BOARD, COMPLETE	
⚠10	1-690-609-11	CORD, POWER	
11	X-4941-228-1	FOOT ASSY	
12	1-533-217-31	HOLDER, FUSE	
⚠F901	1-576-110-11	FUSE (6A/125V)	
⚠F903	1-576-104-11	FUSE (2A/250V)	
⚠F904	1-576-104-11	FUSE (2A/250V)	
⚠T901	1-450-802-11	TRANSFORMER, POWER(US,MX)	
⚠T901	1-450-915-11	TRANSFORMER, POWER(Canadian)	

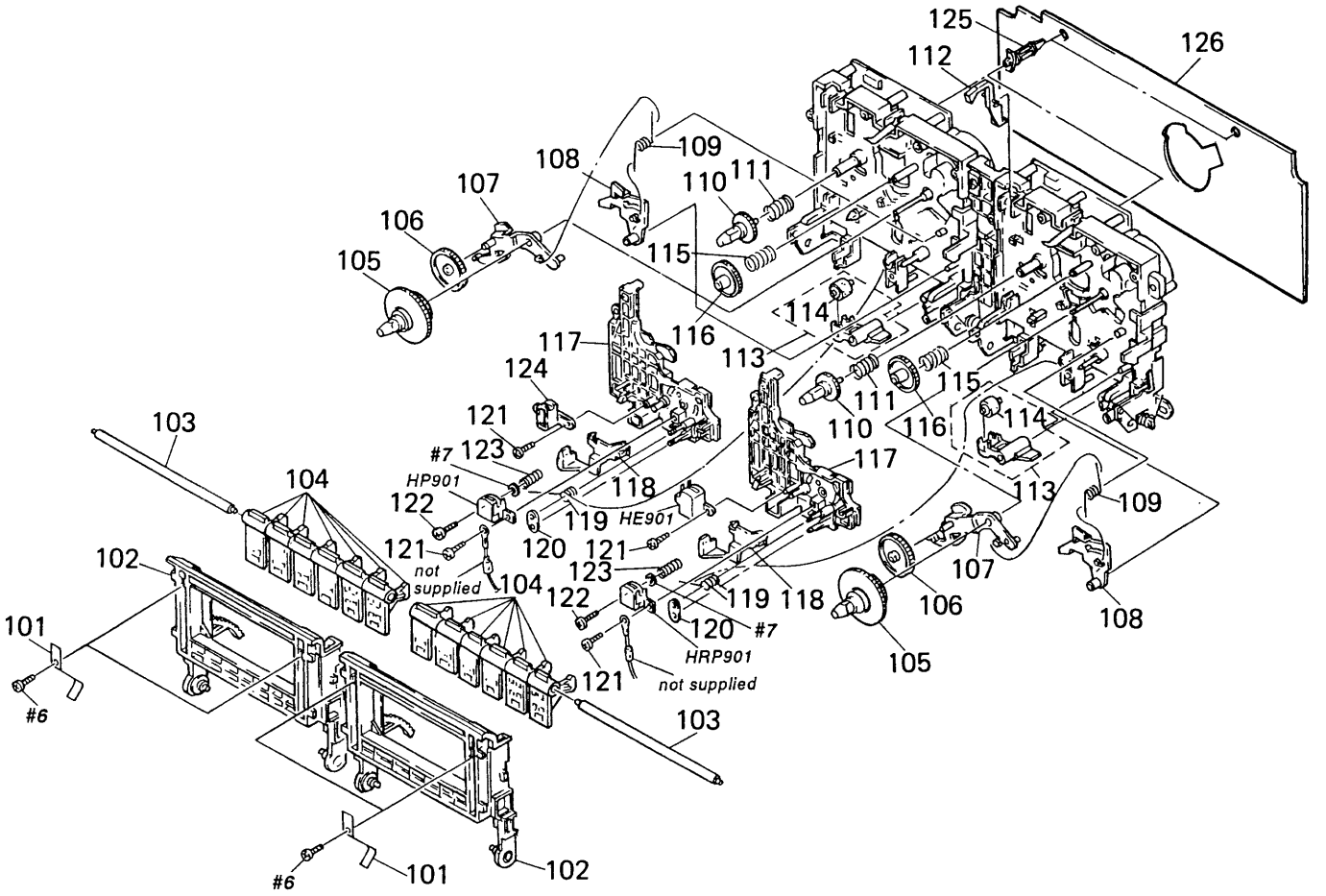
4-2. FRONT PANEL SECTION



Ref.No.	Part No.	Description	Remark
51	X-4943-221-2	PANEL ASSY, FRONT	
52	X-4943-223-1	LID (B) ASSY, CASSETTE	
53	A-4943-222-1	LID (A) ASSY, CASSETTE	
* 54	1-642-822-11	HP BOARD	
* 55	1-642-824-11	SHIFT SW BOARD	
* 56	4-921-941-01	CUSHION (FL)	
* 57	4-943-107-01	HOLDER (FL TUBE)	
* 58	1-642-823-11	POWER SW BOARD	
* 59	A-4347-125-A	CONT BOARD, COMPLETE	
60	1-590-237-11	WIRE, FLAT TYPE (19 CORE)	
61	1-590-459-11	WIRE, FLAT TYPE (11 CORE)	

Ref.No.	Part No.	Description	Remark
* 62	1-642-821-11	TC SW BOARD	
63	4-949-658-01	BUTTON (TC)	
64	3-350-426-01	SPRING, RING	
65	4-943-092-01	PLATE(VOL), LIGHT GUIDE	
66	4-949-659-01	KNOB (VOL-NEW)	
67	4-949-640-01	KNOB (DIA. 21)	
68	4-928-635-21	SCREW, +BV (2.6X10) TAPPING	
69	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
70	4-949-638-01	BUTTON (BLOCK A)	
71	4-949-639-01	BUTTON (BLOCK B)	
FL101	1-519-595-21	INDICATOR TUBE, FLUORESCENT	

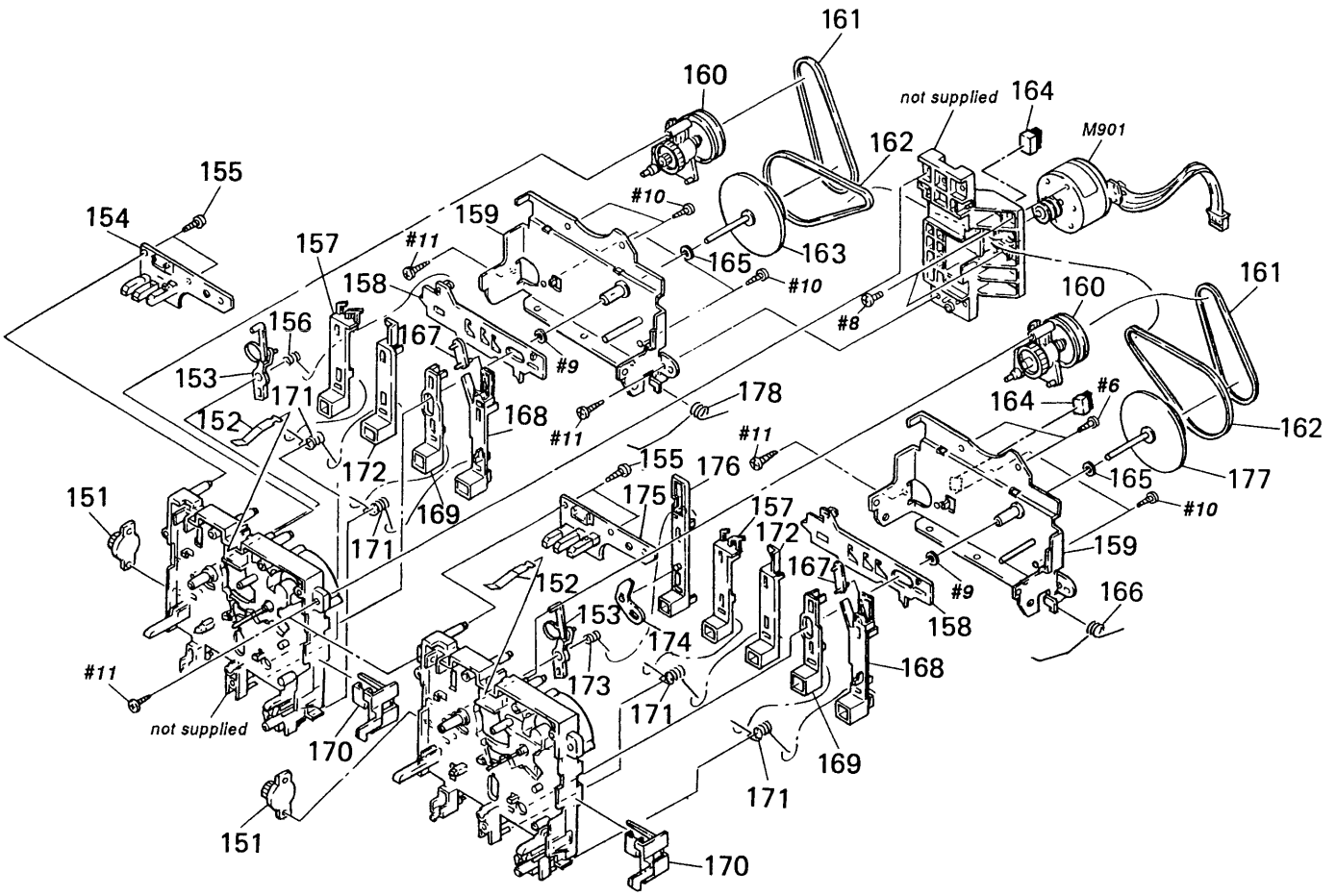
4-3. MECHANISM SECTION-1
(TCM-180VW-H5)



Ref.No.	Part No.	Description	Remark
101	3-358-209-01	SPRING (CASSETTE HOLDER), LEAF	
102	3-358-266-02	HOLDER, CASSETTE	
103	3-371-917-01	SHAFT (BUTTON SHAFT 4)	
104	3-369-335-01	LEVER (BUTTON BASE F)	
105	X-3358-203-1	TABLE (T) ASSY, REEL	
* 106	3-358-284-01	GEAR (TU GEAR)	
* 107	3-358-252-01	LEVER (TU ARM)	
* 108	3-358-253-01	LEVER (SHUT-OFF LEVER)	
109	3-358-243-01	SPRING (TU-SHUT), TORSION	
110	3-358-248-01	GEAR (SUPPLY REEL)	
111	3-358-208-01	SPRING (SUPPLY), COMPRESSION	
* 112	3-358-204-01	LEVER (REC SAFETY)	
113	X-3358-204-1	LEVER (PINCH LEVER) ASSY	
114	3-578-143-11	PINCH ROLLER	
115	3-358-207-01	SPRING (FF GEAR), COMPRESSION	

Ref.No.	Part No.	Description	Remark
* 116	3-358-224-01	GEAR (FF GEAR)	
117	3-358-265-01	SLIDER (HEAD PC BOARD A)	
* 118	3-358-251-01	LEVER (TENSION DETECTION ARM)	
119	3-358-228-01	SPRING, TORSION	
* 120	3-358-215-01	BUSHING (WIRE KIT RETAINER)	
121	3-358-288-11	SCREW (T), AZIMUTH	
122	3-358-288-01	SCREW (T), AZIMUTH	
123	3-358-234-01	SPRING (AZIMUTH), COMPRESSION	
* 124	3-363-931-01	GUIDE, TAPE	
* 125	4-924-098-31	HOLDER, PC BOARD	
* 126	A-4347-446-A	MAIN TC BOARD, COMPLETE	
HE901	1-543-673-11	HEAD, MAGNETIC (ERASE)	
HP901	1-543-319-11	HEAD, MAGNETIC (REC/PB)	
HRP901	1-543-319-11	HEAD, MAGNETIC (REC/PB)	

4-4. MECHANISM SECTION-2
(TCM-180VW-H5)



Ref.No.	Part No.	Description	Remark
151	3-319-224-41	DAMPER, SMALL	
152	3-358-227-01	SPRING, LEAF	
153	3-358-286-01	LEVER (MOTOR LEVER)	
* 154	1-640-702-12	LEAF SW (A) BOARD	
155	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
156	3-358-214-01	SPRING (LOCK), TORSION	
157	3-358-258-01	SLIDER (REW)	
* 158	3-358-249-01	SLIDER (LOCK PLATE)	
* 159	X-3358-208-1	BRACKET (B) ASSY	
160	X-3358-202-1	LEVER (FR ARM) ASSY	
161	3-358-230-01	BELT (A1)	
162	3-364-777-01	BELT (WH)	
163	X-3358-205-1	FLYWHEEL (A) ASSY	
* 164	3-358-289-01	SPACER (VIBRATION PROOF MAT)	
165	3-701-437-01	WASHER	

Ref.No.	Part No.	Description	Remark
166	3-358-229-01	SPRING (LOADING), TORSION	
* 167	3-358-226-01	LEVER (PAUSE LEVER)	
168	3-358-260-01	SLIDER (PAUSE)	
169	3-358-256-01	SLIDER (STOP/EJECT)	
* 170	3-358-261-02	SLIDER (HOLDER LOCK)	
171	3-358-232-01	SPRING (S-P F-R), TORSION	
172	3-358-257-01	SLIDER (FF)	
173	3-358-233-01	SPRING (REC-LOCK), TORSION	
* 174	3-358-255-01	LEVER (GB LEVER)	
* 175	1-640-703-12	LEAF SW (B) BOARD	
176	3-358-259-01	SLIDER (REC)	
177	X-3358-206-1	FLYWHEEL (B) ASSY	
178	3-358-287-01	SPRING (LOADING A), TORSION	
M901	X-3362-377-1	MOTOR (WH) ASSY	

CN **CONT**

SECTION 5
ELECTRICAL PARTS LIST

NOTE :
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal oxide-film resistor
  F : nonflammable
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ , for example :
  uA.... : μ A.... , uPA.... : μ PA....
  uPB.... : μ PB.... , uPC.... : μ PC....
  uPD.... : μ PD....
- CAPACITORS
  uF : μ F
- COILS
  uH : μ H

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref.No.	Part No.	Description			Remark
*	1-642-819-11	CN BOARD			
		********			
	1-533-217-31	HOLDER, FUSE			
		< FUSE >			
⚠F903	1-576-104-11	FUSE (2A/250V)			
⚠F904	1-576-104-11	FUSE (2A/250V)			
**********					
*	A-4347-125-A	CONT BOARD, COMPLETE			
		**********			
*	4-921-941-01	CUSHION (FL)			
*	4-943-107-01	HOLDER (FL TUBE)			
		< CAPACITOR >			
C101	1-162-306-11	CERAMIC	0.01uF	20%	16V
C102	1-130-499-00	CERAMIC	0.22uF		25V
C103	1-162-306-11	CERAMIC	0.01uF	20%	16V
C104	1-124-261-00	ELECT	10uF	20%	50V
C105	1-162-306-11	CERAMIC	0.01uF	20%	16V
C106	1-125-486-11	DOUBLE LAYERS	0.22F		5.5V
C107	1-162-306-11	CERAMIC	0.01uF	20%	16V
C108	1-162-306-11	CERAMIC	0.01uF	20%	16V
C109	1-162-306-11	CERAMIC	0.01uF	20%	16V
C110	1-124-261-00	ELECT	10uF	20%	50V
C115	1-124-261-00	ELECT	10uF	20%	50V
C302	1-130-485-00	MYLAR	0.015uF	5%	50V
C303	1-130-485-00	MYLAR	0.015uF	5%	50V
C304	1-130-485-00	MYLAR	0.015uF	5%	50V
C305	1-130-480-00	MYLAR	0.0056uF	5%	50V
C306	1-130-487-00	MYLAR	0.022uF	5%	50V
C307	1-130-477-00	MYLAR	0.0033uF	5%	50V
C308	1-130-483-00	MYLAR	0.01uF	5%	50V
C309	1-130-479-00	MYLAR	0.0047uF	5%	50V
C310	1-162-282-31	CERAMIC	100PF	10%	50V
C311	1-162-282-31	CERAMIC	100PF	10%	50V
C312	1-124-925-11	ELECT	2.2uF	20%	100V
C313	1-162-306-11	CERAMIC	0.01uF	20%	16V
C314	1-124-477-11	ELECT	47uF	20%	25V
C315	1-126-157-11	ELECT	10uF	20%	16V
C316	1-164-159-11	CERAMIC	0.1uF		50V
C317	1-124-443-00	ELECT	100uF	20%	10V
C318	1-124-443-00	ELECT	100uF	20%	10V
C352	1-130-485-00	MYLAR	0.015uF	5%	50V
C353	1-130-485-00	MYLAR	0.015uF	5%	50V
C354	1-130-485-00	MYLAR	0.015uF	5%	50V
C355	1-130-480-00	MYLAR	0.0056uF	5%	50V
C356	1-130-487-00	MYLAR	0.022uF	5%	50V
C357	1-130-477-00	MYLAR	0.0033uF	5%	50V
C358	1-130-483-00	MYLAR	0.01uF	5%	50V
C359	1-130-479-00	MYLAR	0.0047uF	5%	50V
C360	1-162-282-31	CERAMIC	100PF	10%	50V
C361	1-162-282-31	CERAMIC	100PF	10%	50V
C362	1-124-925-11	ELECT	2.2uF	20%	100V
C365	1-126-157-11	ELECT	10uF	20%	50V
		< CONNECTOR >			
* CN101	1-565-480-11	CONNECTOR, BOARD TO BOARD 4P			
* CN102	1-565-480-11	CONNECTOR, BOARD TO BOARD 4P			
* CN103	1-568-830-11	SOCKET, CONNECTOR 11P			
CN104	1-568-802-11	SOCKET, CONNECTOR 19P			
* CN151	1-565-295-11	PLUG, CONNECTOR 4P			
* CN152	1-565-295-11	PLUG, CONNECTOR 4P			
		< DIODE >			
D101	8-719-987-63	DIODE	1N4148M		
D102	8-719-987-63	DIODE	1N4148M		
D103	8-719-987-63	DIODE	1N4148M		
D104	8-719-010-26	DIODE	UZ-3.9BSB		
D105	8-719-200-82	DIODE	11ES2		

CONT

Ref.No.	Part No.	Description	Remark
D106	8-719-987-63	DIODE 1N4148M	
D107	8-719-987-63	DIODE 1N4148M	
D108	8-719-987-63	DIODE 1N4148M	
D109	8-719-987-63	DIODE 1N4148M	
D110	8-719-987-63	DIODE 1N4148M	
D111	8-719-987-63	DIODE 1N4148M	
D112	8-719-987-63	DIODE 1N4148M	
D115	8-719-987-63	DIODE 1N4148M	
D116	8-719-987-63	DIODE 1N4148M	
D117	8-719-987-63	DIODE 1N4148M	
D118	8-719-987-63	DIODE 1N4148M	
D124	8-719-987-63	DIODE 1N4148M	
D125	8-719-987-63	DIODE 1N4148M	
D126	8-719-987-63	DIODE 1N4148M	
D130	8-719-987-63	DIODE 1N4148M	
D131	8-719-987-63	DIODE 1N4148M	
		< FILTER >	
FL101	1-519-595-21	INDICATOR TUBE, FLUORESCENT	
		< IC >	
IC101	8-759-053-97	IC uPD75212ACW-A21	
IC102	8-749-920-83	IC GP1U52XB	
IC103	8-759-916-12	IC SN74HC00AN	
IC302	8-759-634-51	IC M5218AP	
IC303	8-759-820-62	IC LB1639	
		< COIL >	
L101	1-410-521-11	INDUCTOR 100uH	
		< TRANSISTOR >	
Q101	8-729-900-80	TRANSISTOR DTC114ES	
Q102	8-729-900-63	TRANSISTOR DTA124ES	
Q103	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q104	8-729-900-36	TRANSISTOR DTC124ES	
Q105	8-729-900-36	TRANSISTOR DTC124ES	
Q106	8-729-900-36	TRANSISTOR DTC124ES	
Q109	8-729-900-61	TRANSISTOR DTA114ES	
Q111	8-729-900-36	TRANSISTOR DTC124ES	
Q301	8-729-141-30	TRANSISTOR 2SC3623A-LK	
Q351	8-729-141-30	TRANSISTOR 2SC3623A-LK	
		< RESISTOR >	
R101	1-249-417-11	CARBON 1K 5% 1/4W	
R102	1-249-429-11	CARBON 10K 5% 1/4W	
R103	1-249-437-11	CARBON 47K 5% 1/4W	
R104	1-249-433-11	CARBON 22K 5% 1/4W	
R105	1-249-433-11	CARBON 22K 5% 1/4W	

Ref.No.	Part No.	Description	Remark
R106	1-249-439-11	CARBON 68K 5% 1/4W	
R107	1-249-417-11	CARBON 1K 5% 1/4W	
R108	1-249-405-11	CARBON 100 5% 1/4W	
R109	1-249-429-11	CARBON 10K 5% 1/4W	
R110	1-249-429-11	CARBON 10K 5% 1/4W	
R111	1-249-429-11	CARBON 10K 5% 1/4W	
R112	1-249-423-11	CARBON 3.3K 5% 1/4W	
R113	1-249-437-11	CARBON 47K 5% 1/4W	
R114	1-249-437-11	CARBON 47K 5% 1/4W	
R115	1-249-437-11	CARBON 47K 5% 1/4W	
R116	1-249-437-11	CARBON 47K 5% 1/4W	
R118	1-249-433-11	CARBON 22K 5% 1/4W	
R119	1-249-433-11	CARBON 22K 5% 1/4W	
R300	1-249-411-11	CARBON 330 5% 1/4W	
R304	1-249-431-11	CARBON 15K 5% 1/4W	
R305	1-249-439-11	CARBON 68K 5% 1/4W	
R306	1-249-433-11	CARBON 22K 5% 1/4W	
R307	1-249-431-11	CARBON 15K 5% 1/4W	
R308	1-249-429-11	CARBON 10K 5% 1/4W	
R309	1-249-429-11	CARBON 10K 5% 1/4W	
R310	1-247-852-11	CARBON 7.5K 5% 1/4W	
R311	1-247-852-11	CARBON 7.5K 5% 1/4W	
R312	1-249-425-11	CARBON 4.7K 5% 1/4W	
R313	1-249-425-11	CARBON 4.7K 5% 1/4W	
R314	1-249-423-11	CARBON 3.3K 5% 1/4W	
R315	1-249-423-11	CARBON 3.3K 5% 1/4W	
R316	1-247-887-00	CARBON 220K 5% 1/4W	
R317	1-249-421-11	CARBON 2.2K 5% 1/4W	
R318	1-249-425-11	CARBON 4.7K 5% 1/4W	
R319	1-249-433-11	CARBON 22K 5% 1/4W	
R320	1-249-433-11	CARBON 22K 5% 1/4W	
R321	1-249-396-11	CARBON 18 5% 1/4W	
R322	1-249-413-11	CARBON 470 5% 1/4W	
R354	1-249-431-11	CARBON 15K 5% 1/4W	
R355	1-249-439-11	CARBON 68K 5% 1/4W	
R356	1-249-433-11	CARBON 22K 5% 1/4W	
R357	1-249-431-11	CARBON 15K 5% 1/4W	
R358	1-249-429-11	CARBON 10K 5% 1/4W	
R359	1-249-429-11	CARBON 10K 5% 1/4W	
R360	1-247-852-11	CARBON 7.5K 5% 1/4W	
R361	1-247-852-11	CARBON 7.5K 5% 1/4W	
R362	1-249-425-11	CARBON 4.7K 5% 1/4W	
R363	1-249-425-11	CARBON 4.7K 5% 1/4W	
R364	1-249-423-11	CARBON 3.3K 5% 1/4W	
R365	1-249-423-11	CARBON 3.3K 5% 1/4W	
R366	1-247-887-00	CARBON 220K 5% 1/4W	
R367	1-249-421-11	CARBON 2.2K 5% 1/4W	
R368	1-249-425-11	CARBON 4.7K 5% 1/4W	
R370	1-249-433-11	CARBON 22K 5% 1/4W	

CONT HP LEAF SW(A) LEAF SW(B) MAIN

Ref.No.	Part No.	Description	Remark
		< VARIABLE RESISTOR >	
RV301	1-223-262-11	RES, VAR, SLIDE 100K/100K(100Hz)	
RV302	1-223-262-11	RES, VAR, SLIDE 100K/100K(330Hz)	
RV303	1-223-262-11	RES, VAR, SLIDE 100K/100K(1kHz)	
RV304	1-223-262-11	RES, VAR, SLIDE 100K/100K(3.3kHz)	
RV305	1-223-262-11	RES, VAR, SLIDE 100K/100K(10kHz)	
RV306	1-241-427-11	RES, VAR, CARBON 100K(BALANCE)	
RV307	1-241-405-11	RES, VAR, CARBON 100K/100K(VOLUME)	
		< SWITCH >	
S101	1-554-303-21	SWITCH, TACTILE (1)	
S102	1-554-303-21	SWITCH, TACTILE (2)	
S103	1-554-303-21	SWITCH, TACTILE (3)	
S104	1-554-303-21	SWITCH, TACTILE (4)	
S105	1-554-303-21	SWITCH, TACTILE (5)	
S106	1-554-303-21	SWITCH, TACTILE (6)	
S107	1-554-303-21	SWITCH, TACTILE (7)	
S108	1-554-303-21	SWITCH, TACTILE (8)	
S109	1-554-303-21	SWITCH, TACTILE (9)	
S110	1-554-303-21	SWITCH, TACTILE (0)	
S112	1-554-303-21	SWITCH, TACTILE (BAND)	
S114	1-554-303-21	SWITCH, TACTILE (+)	
S115	1-554-303-21	SWITCH, TACTILE (-)	
S116	1-554-303-21	SWITCH, TACTILE (MEMORY)	
S118	1-554-303-21	SWITCH, TACTILE (TAPE)	
S119	1-554-303-21	SWITCH, TACTILE (CD)	
S120	1-554-303-21	SWITCH, TACTILE (TUNER)	
S121	1-554-303-21	SWITCH, TACTILE (PHONO)	
S122	1-554-303-21	SWITCH, TACTILE (VIDEO)	
		< VIBRATOR >	
X101	1-567-775-11	VIBRATOR, CERAMIC	
**********			
*	1-642-822-11	HP BOARD	
		********	
		< CONNECTOR >	
* CN651	1-564-778-11	PLUG, CONNECTOR (2.5MM) 4P	
		< JACK >	
J701	1-569-113-11	JACK, LARGE TYPE (HEADPHONES)	
		< RESISTOR >	
R609	1-249-419-11	CARBON 1.5K 5%	1/4W
R610	1-249-419-11	CARBON 1.5K 5%	1/4W
R611	1-249-419-11	CARBON 1.5K 5%	1/4W
R612	1-249-419-11	CARBON 1.5K 5%	1/4W
**********			
	1-640-702-12	LEAF SW (A) BOARD	
		**********	
		< CAPACITOR >	
C544	1-164-159-11	CERAMIC 0.1MF	50V
		< CONNECTOR >	
* CN415	1-564-497-11	PIN, CONNECTOR 4P	
		< SWITCH >	
S4	1-571-736-11	SWITCH, LEAF (MOTOR)	
S5	1-571-736-11	SWITCH, LEAF (FWD)	
**********			
	1-640-703-12	LEAF SW (B) BOARD	
		**********	
		< CAPACITOR >	
C545	1-164-159-11	CERAMIC 0.1MF	50V
		< CONNECTOR >	
* CN416	1-564-498-11	PIN, CONNECTOR 5P	
		< SWITCH >	
S1	1-571-736-11	SWITCH, LEAF (MOTOR)	
S2	1-571-736-11	SWITCH, LEAF (FWD)	
S3	1-571-736-11	SWITCH, LEAF (REC)	
**********			
*	A-4347-113-A	MAIN BOARD, COMPLETE	
		**********	
*	4-942-204-01	PLATE, GROUND	
		< CAPACITOR >	
C1	1-161-494-00	CERAMIC 0.022uF	25V
C2	1-124-477-11	ELECT 47uF 20%	25V
C3	1-161-379-00	CERAMIC 0.01uF 20%	25V
C4	1-124-464-11	ELECT 0.22uF 20%	50V
C5	1-161-379-00	CERAMIC 0.01uF 20%	25V
C9	1-161-379-00	CERAMIC 0.01uF 20%	25V
C13	1-162-282-31	CERAMIC 100PF 10%	50V
C14	1-101-005-00	CERAMIC 0.022UF	50V
C21	1-101-006-00	CERAMIC 0.047uF	50V
C22	1-161-379-00	CERAMIC 0.01uF 20%	25V

Ref.No.	Part No.	Description			Remark
C23	1-124-477-11	ELECT	47uF	20%	25V
C24	1-123-382-00	ELECT	3.3uF	20%	100V
C25	1-161-379-00	CERAMIC	0.01uF	20%	25V
C26	1-161-329-00	CERAMIC	0.0068uF	30%	16V
C27	1-162-282-31	CERAMIC	100PF	10%	50V
C28	1-124-903-11	ELECT	1uF	20%	50V
C30	1-124-903-11	ELECT	1uF	20%	50V
C31	1-124-902-00	ELECT	0.47uF	20%	50V
C32	1-124-463-00	ELECT	0.1uF	20%	50V
C33	1-161-052-00	CERAMIC	0.012uF	10%	50V
C34	1-123-382-00	ELECT	3.3uF	20%	100V
C35	1-161-052-00	CERAMIC	0.012uF	10%	50V
C36	1-123-382-00	ELECT	3.3uF	20%	100V
C37	1-124-907-11	ELECT	10uF	20%	50V
C39	1-161-379-00	CERAMIC	0.01uF	20%	25V
C40	1-124-463-00	ELECT	0.1uF	20%	50V
C41	1-124-927-11	ELECT	4.7uF	20%	100V
C42	1-161-379-00	CERAMIC	0.01uF	20%	25V
C43	1-126-176-11	ELECT	220uF	20%	10V
C44	1-161-379-00	CERAMIC	0.01uF	20%	25V
C46	1-161-375-00	CERAMIC	0.0022uF	20%	50V
C49	1-161-375-00	CERAMIC	0.0022uF	20%	50V
C61	1-164-098-11	CERAMIC	0.047uF		12V
C63	1-161-494-00	CERAMIC	0.022uF		25V
C65	1-162-198-31	CERAMIC	8.2PF	10%	50V
C81	1-102-961-00	CERAMIC	27PF	5%	50V
C82	1-102-961-00	CERAMIC	27PF	5%	50V
C83	1-161-379-00	CERAMIC	0.01uF	20%	25V
C84	1-161-379-00	CERAMIC	0.01uF	20%	25V
C85	1-161-379-00	CERAMIC	0.01uF	20%	25V
C86	1-124-477-11	ELECT	47uF	20%	25V
C87	1-161-379-00	CERAMIC	0.01uF	20%	25V
C88	1-124-477-11	ELECT	47uF	20%	25V
C101	1-124-925-11	ELECT	2.2uF	20%	100V
C102	1-124-463-00	ELECT	0.1uF	20%	50V
C103	1-161-379-00	CERAMIC	0.01uF	20%	25V
C104	1-161-379-00	CERAMIC	0.01uF	20%	25V
C105	1-124-477-11	ELECT	47uF	20%	25V
C201	1-162-286-31	CERAMIC	220PF	10%	50V
C204	1-124-925-11	ELECT	2.2uF	20%	100V
C205	1-162-282-31	CERAMIC	100PF	10%	50V
C206	1-162-282-31	CERAMIC	100PF	10%	50V
C207	1-124-477-11	ELECT	47uF	20%	25V
C208	1-161-377-00	CERAMIC	0.0047uF	20%	16V
C209	1-161-374-11	CERAMIC	0.0015uF	20%	50V
C210	1-124-464-11	ELECT	0.22uF	20%	50V
C211	1-124-477-11	ELECT	47uF	20%	25V
C212	1-124-477-11	ELECT	47uF	20%	25V
C213	1-124-477-11	ELECT	47uF	20%	25V

Ref.No.	Part No.	Description			Remark
C214	1-161-494-00	CERAMIC	0.022uF		25V
C215	1-161-494-00	CERAMIC	0.022uF		25V
C251	1-162-286-31	CERAMIC	220PF	10%	50V
C254	1-124-925-11	ELECT	2.2uF	20%	100V
C255	1-162-282-31	CERAMIC	100PF	10%	50V
C256	1-162-282-31	CERAMIC	100PF	10%	50V
C257	1-124-477-11	ELECT	47uF	20%	25V
C258	1-161-377-00	CERAMIC	0.0047uF	20%	16V
C259	1-161-374-11	CERAMIC	0.0015uF	20%	50V
C260	1-124-464-11	ELECT	0.22uF	20%	50V
C261	1-124-477-11	ELECT	47uF	20%	25V
C301	1-124-925-11	ELECT	2.2uF	20%	100V
C302	1-162-196-31	CERAMIC	5.6PF	10%	50V
C321	1-124-927-11	ELECT	4.7uF	20%	100V
C351	1-124-925-11	ELECT	2.2uF	20%	100V
C352	1-162-196-31	CERAMIC	5.6PF	10%	50V
C371	1-124-927-11	ELECT	4.7uF	20%	100V
C921	1-124-907-11	ELECT	10uF	20%	50V
C922	1-126-101-11	ELECT	100uF	20%	16V
C923	1-126-101-11	ELECT	100uF	20%	16V
C924	1-124-477-11	ELECT	47uF	20%	25V
C931	1-126-101-11	ELECT	100uF	20%	16V
C932	1-126-101-11	ELECT	100uF	20%	16V
C933	1-124-907-11	ELECT	10uF	20%	50V
C940	1-124-907-11	ELECT	10uF	20%	50V
C941	1-124-907-11	ELECT	10uF	20%	50V
C950	1-164-159-11	CERAMIC	0.1uF		50V

< FILTER >

CF1	1-577-070-81	FILTER, CERAMIC
CF3	1-577-070-81	FILTER, CERAMIC
CF21	1-577-075-11	OSCILLATOR, CERAMIC

< COMPOSITION CIRCUIT BLOCK >

CFT21	1-404-713-11	TRANSFORMER, IF

< CONNECTOR >

* CN1	1-568-830-11	SOCKET, CONNECTOR 11P
CN203	1-568-802-11	SOCKET, CONNECTOR 19P
CN751	1-691-166-11	PIN, CONNECTOR 9P
CN752	1-691-166-11	PIN, CONNECTOR 9P
CN910	1-691-637-11	PIN, CONNECTOR 9P

< DIODE >

D920	8-719-001-76	DIODE UZL-12M3

MAIN

Ref.No.	Part No.	Description	Remark
		< FRONT END >	
FE1	1-693-090-11	FRONT END (FM) (2 GANG)	
FE61	1-239-260-11	ENCAPSULATED COMPONENT	
		< IC >	
IC21	8-759-821-45	IC LA1851N	
IC81	8-759-820-91	IC LC7218	
IC201	8-759-634-51	IC M5218AP	
IC202	8-759-208-08	IC TC4052BPHB	
IC203	8-759-801-01	IC LC4966	
IC301	8-759-634-51	IC M5218AP	
IC902	8-759-604-50	IC M5F7910L	
IC903	8-759-604-32	IC M5F7810L	
IC904	8-759-604-32	IC M5F7810L	
		< JACK >	
J201	1-580-836-11	JACK, PIN 6P (PHONO/CD/VIDEO)	
		< COIL >	
L1	1-410-501-11	INDUCTOR 2.2uH	
L21	1-410-686-11	INDUCTOR 1mH	
		< FILTER >	
LPF21	1-235-164-00	FILTER, LOW PASS	
LPF22	1-235-164-00	FILTER, LOW PASS	
		< TRANSISTOR >	
Q3	8-729-230-99	TRANSISTOR 2SC2669-0Y	
Q26	8-729-900-80	TRANSISTOR DTC114ES	
Q81	8-729-900-61	TRANSISTOR DTA114ES	
Q82	8-729-900-80	TRANSISTOR DTC114ES	
Q83	8-729-202-67	TRANSISTOR 2SK246-GR3	
Q84	8-729-201-84	TRANSISTOR 2SC3112-B	
Q201	8-729-900-63	TRANSISTOR DTA124ES	
Q202	8-729-900-36	TRANSISTOR DTC124ES	
Q903	8-729-209-15	TRANSISTOR 2SD2012	
		< RESISTOR >	
R1	1-249-405-11	CARBON 100 5% 1/4W	
R2	1-249-411-11	CARBON 330 5% 1/4W	
R10	1-249-411-11	CARBON 330 5% 1/4W	
R12	1-249-411-11	CARBON 330 5% 1/4W	
R14	1-247-891-00	CARBON 330K 5% 1/4W	
R20	1-249-405-11	CARBON 100 5% 1/4W	
R21	1-249-404-00	CARBON 82 5% 1/4W	
R22	1-249-428-11	CARBON 8.2K 5% 1/4W	
R23	1-249-417-11	CARBON 1K 5% 1/4W	
R24	1-249-429-11	CARBON 10K 5% 1/4W	

Ref.No.	Part No.	Description	Remark
R25	1-249-428-11	CARBON 8.2K 5% 1/4W	
R29	1-249-429-11	CARBON 10K 5% 1/4W	
R31	1-249-418-11	CARBON 1.2K 5% 1/4W	
R32	1-249-429-11	CARBON 10K 5% 1/4W	
R33	1-249-429-11	CARBON 10K 5% 1/4W	
R34	1-249-437-11	CARBON 47K 5% 1/4W	
R35	1-249-437-11	CARBON 47K 5% 1/4W	
R41	1-249-429-11	CARBON 10K 5% 1/4W	
R46	1-249-429-11	CARBON 10K 5% 1/4W	
R51	1-247-719-11	CARBON 3.3K 5% 1/4W	
R52	1-247-719-11	CARBON 3.3K 5% 1/4W	
R61	1-249-437-11	CARBON 47K 5% 1/4W	
R62	1-249-437-11	CARBON 47K 5% 1/4W	
R81	1-249-417-11	CARBON 1K 5% 1/4W	
R82	1-249-417-11	CARBON 1K 5% 1/4W	
R83	1-249-417-11	CARBON 1K 5% 1/4W	
R84	1-249-417-11	CARBON 1K 5% 1/4W	
R85	1-249-429-11	CARBON 10K 5% 1/4W	
R86	1-249-417-11	CARBON 1K 5% 1/4W	
R88	1-249-425-11	CARBON 4.7K 5% 1/4W	
R89	1-249-417-11	CARBON 1K 5% 1/4W	
R91	1-249-417-11	CARBON 1K 5% 1/4W	
R92	1-249-401-11	CARBON 47 5% 1/4W	
R101	1-249-423-11	CARBON 3.3K 5% 1/4W	
R102	1-249-414-11	CARBON 560 5% 1/4W	
R103	1-249-417-11	CARBON 1K 5% 1/4W	
R104	1-249-410-11	CARBON 270 5% 1/4W	
R105	1-249-425-11	CARBON 4.7K 5% 1/4W	
R106	1-249-421-11	CARBON 2.2K 5% 1/4W	
R107	1-249-425-11	CARBON 4.7K 5% 1/4W	
R108	1-249-405-11	CARBON 100 5% 1/4W	
R109	1-249-425-11	CARBON 4.7K 5% 1/4W	
R110	1-249-405-11	CARBON 100 5% 1/4W	
R201	1-249-417-11	CARBON 1K 5% 1/4W	
R205	1-249-417-11	CARBON 1K 5% 1/4W	
R206	1-249-441-11	CARBON 100K 5% 1/4W	
R207	1-249-416-11	CARBON 820 5% 1/4W	
R208	1-247-897-11	CARBON 560K 5% 1/4W	
R209	1-249-437-11	CARBON 47K 5% 1/4W	
R210	1-249-409-11	CARBON 220 5% 1/4W	
R211	1-249-441-11	CARBON 100K 5% 1/4W	
R212	1-249-409-11	CARBON 220 5% 1/4W	
R213	1-249-437-11	CARBON 47K 5% 1/4W	
R214	1-249-421-11	CARBON 2.2K 5% 1/4W	
R215	1-249-437-11	CARBON 47K 5% 1/4W	
R216	1-249-421-11	CARBON 2.2K 5% 1/4W	
R219	1-249-433-11	CARBON 22K 5% 1/4W	
R251	1-249-417-11	CARBON 1K 5% 1/4W	
R255	1-249-417-11	CARBON 1K 5% 1/4W	

Ref.No.	Part No.	Description				Remark
R256	1-249-441-11	CARBON	100K	5%	1/4W	
R257	1-249-416-11	CARBON	820	5%	1/4W	
R258	1-247-897-11	CARBON	560K	5%	1/4W	
R259	1-249-437-11	CARBON	47K	5%	1/4W	
R260	1-249-409-11	CARBON	220	5%	1/4W	
R261	1-249-441-11	CARBON	100K	5%	1/4W	
R262	1-249-409-11	CARBON	220	5%	1/4W	
R301	1-249-417-11	CARBON	1K	5%	1/4W	
R302	1-249-441-11	CARBON	100K	5%	1/4W	
R303	1-249-441-11	CARBON	100K	5%	1/4W	
R321	1-249-441-11	CARBON	100K	5%	1/4W	
R322	1-249-441-11	CARBON	100K	5%	1/4W	
R351	1-249-417-11	CARBON	1K	5%	1/4W	
R352	1-249-441-11	CARBON	100K	5%	1/4W	
R353	1-249-441-11	CARBON	100K	5%	1/4W	
R371	1-249-441-11	CARBON	100K	5%	1/4W	
R372	1-249-441-11	CARBON	100K	5%	1/4W	
R905	1-247-694-11	CARBON	33	5%	1/4W	
⚠R907	1-215-881-11	METAL OXIDE	15	5%	2W	F
⚠R908	1-215-881-11	METAL OXIDE	15	5%	2W	F
R909	1-249-421-11	CARBON	2.2K	5%	1/4W	
R920	1-249-417-11	CARBON	1K	5%	1/4W	
		< VARIABLE RESISTOR >				
RV22	1-238-601-11	RES, ADJ, CARBON, 22K (AM TUNING)				
RV24	1-238-601-11	RES, ADJ, CARBON, 22K (FM TUNING)				
		< TRANSFORMER >				
T21	1-404-807-11	TRANSFORMER, DISCRIMINATOR				
		< TERMINAL >				
* TM1	1-537-264-11	TERMINAL BOARD (ANTENNA)				
* TM601	1-537-265-11	TERMINAL BOARD (SPEAKER)				
		< TEST PIN >				
* TP1	1-560-060-00	PIN, CONNECTOR 2P				
		< VIBRATOR >				
XT81	1-577-126-11	VIBRATOR, CRYSTAL (7.2MHz)				
**********						
*	A-4347-446-A	MAIN TC BOARD, COMPLETE				
		**********				
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S				
		< CAPACITOR >				
C400	1-162-289-31	CERAMIC	390PF		10%	50V

Ref.No.	Part No.	Description			Remark
C401	1-136-157-00	FILM	0.022uF	5%	50V
C402	1-124-767-00	ELECT	2.2uF	20%	50V
C403	1-124-443-00	ELECT	100uF	20%	10V
C404	1-162-289-31	CERAMIC	390PF	10%	50V
C405	1-136-157-00	FILM	0.022uF	5%	50V
C406	1-124-767-00	ELECT	2.2uF	20%	50V
C407	1-124-443-00	ELECT	100uF	20%	10V
C408	1-130-479-00	MYLAR	0.0047uF	5%	50V
C409	1-162-289-31	CERAMIC	390PF	10%	50V
C410	1-124-903-11	ELECT	1uF	20%	50V
C411	1-124-925-11	ELECT	2.2uF	20%	100V
C413	1-124-472-11	ELECT	470uF	20%	10V
C414	1-131-587-11	TANTALUM	0.68uF	5%	35V
C415	1-124-257-00	ELECT	2.2uF	20%	50V
C416	1-126-163-11	ELECT	4.7uF	20%	50V
C417	1-124-465-00	ELECT	0.47uF	20%	50V
C418	1-124-907-11	ELECT	10uF	20%	50V
C419	1-124-907-11	ELECT	10uF	20%	50V
C420	1-124-907-11	ELECT	10uF	20%	50V
C421	1-162-284-31	CERAMIC	150PF	10%	50V
C422	1-136-273-91	FILM	75PF	5%	630V
C423	1-136-271-00	FILM	56PF	5%	630V
C424	1-162-280-31	CERAMIC	82PF	10%	50V
C441	1-162-282-31	CERAMIC	100PF	10%	50V
C442	1-164-159-11	CERAMIC	0.1uF		50V
C443	1-124-903-11	ELECT	1uF	20%	50V
C446	1-162-282-31	CERAMIC	100PF	10%	50V
C500	1-162-289-31	CERAMIC	390PF	10%	50V
C501	1-136-157-00	FILM	0.022uF	5%	50V
C502	1-124-767-00	ELECT	2.2uF	20%	50V
C503	1-124-443-00	ELECT	100uF	20%	10V
C504	1-162-289-31	CERAMIC	390PF	10%	50V
C505	1-136-157-00	FILM	0.022uF	5%	50V
C506	1-124-767-00	ELECT	2.2uF	20%	50V
C507	1-124-443-00	ELECT	100uF	20%	10V
C508	1-130-479-00	MYLAR	0.0047uF	5%	50V
C509	1-162-289-31	CERAMIC	390PF	10%	50V
C511	1-124-925-11	ELECT	2.2uF	20%	100V
C513	1-124-472-11	ELECT	470uF	20%	10V
C514	1-131-587-11	TANTALUM	0.68uF	5%	35V
C515	1-124-257-00	ELECT	2.2uF	20%	50V
C516	1-126-163-11	ELECT	4.7uF	20%	50V
C517	1-124-465-00	ELECT	0.47uF	20%	50V
C518	1-124-907-11	ELECT	10uF	20%	50V
C520	1-124-907-11	ELECT	10uF	20%	50V
C521	1-162-284-31	CERAMIC	150PF	10%	50V
C522	1-136-273-91	FILM	75PF	5%	630V
C523	1-136-271-00	FILM	56PF	5%	630V
C524	1-162-280-31	CERAMIC	82PF	10%	50V

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

MAIN TC

Ref.No.	Part No.	Description			Remark
C525	1-136-562-11	FILM	0.0082uF	5%	630V
C526	1-130-482-00	MYLAR	0.0082uF	5%	50V
C527	1-124-925-11	ELECT	2.2uF	20%	100V
C528	1-130-482-00	MYLAR	0.0082uF	5%	50V
C529	1-130-478-00	MYLAR	0.0039uF	5%	50V
C530	1-130-478-00	MYLAR	0.0039uF	5%	50V
C531	1-124-902-00	ELECT	0.47uF	20%	50V
C532	1-124-925-11	ELECT	2.2uF	20%	100V
C533	1-124-556-11	ELECT	2200uF	20%	16V
C534	1-124-120-11	ELECT	220uF	20%	25V
C535	1-124-927-11	ELECT	4.7uF	20%	100V
C536	1-124-903-11	ELECT	1uF	20%	50V
C540	1-124-472-11	ELECT	470uF	20%	10V
C541	1-162-282-31	CERAMIC	100PF	10%	50V
C542	1-164-159-11	CERAMIC	0.1uF		50V
C546	1-162-282-31	CERAMIC	100PF	10%	50V
C560	1-124-472-11	ELECT	470uF	20%	10V
		< CONNECTOR >			
* CN400	1-564-506-11	PLUG, CONNECTOR 3P			
* CN401	1-564-509-11	PLUG, CONNECTOR 6P			
* CN402	1-564-505-11	PLUG, CONNECTOR 2P			
* CN405	1-560-061-00	PIN, CONNECTOR 3P			
* CN406	1-564-505-11	PLUG, CONNECTOR 2P			
* CN407	1-560-060-00	PIN, CONNECTOR 2P			
* CN410	1-564-506-11	PLUG, CONNECTOR 3P			
* CN411	1-564-508-11	PLUG, CONNECTOR 5P			
* CN412	1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P			
* CN551	1-564-507-11	PLUG, CONNECTOR 4P			
* CN552	1-564-512-11	PLUG, CONNECTOR 9P			
		< DIODE >			
D500	8-719-987-63	DIODE	1N4148M		
D501	8-719-987-63	DIODE	1N4148M		
D502	8-719-987-63	DIODE	1N4148M		
D503	8-719-987-63	DIODE	1N4148M		
D504	8-719-987-63	DIODE	1N4148M		
D505	8-719-987-63	DIODE	1N4148M		
D506	8-719-987-63	DIODE	1N4148M		
		< IC >			
IC400	8-759-111-44	IC	uPC4570C-1		
IC401	8-759-111-44	IC	uPC4570C-1		
IC402	8-759-000-49	IC	MC14066BCP		
IC403	8-752-057-21	IC	CXA1100P		
IC404	8-752-060-64	IC	CXA1198AP		
IC501	8-759-140-11	IC	uPD4011BC		
IC502	8-759-040-01	IC	MC14001BCP		

Ref.No.	Part No.	Description			Remark
IC515	8-759-071-48	IC	TA7807S		
IC516	8-759-604-95	IC	M5F79M07L		
		< COIL >			
L400	1-410-780-11	INDUCTOR	27mH		
L500	1-410-780-11	INDUCTOR	27mH		
		< TRANSISTOR >			
Q400	8-729-900-89	TRANSISTOR	DTC144ES		
Q401	8-729-900-89	TRANSISTOR	DTC144ES		
Q402	8-729-119-78	TRANSISTOR	2SC2785-HFE		
Q403	8-729-119-78	TRANSISTOR	2SC2785-HFE		
Q500	8-729-900-89	TRANSISTOR	DTC144ES		
Q502	8-729-119-78	TRANSISTOR	2SC2785-HFE		
Q503	8-729-119-78	TRANSISTOR	2SC2785-HFE		
Q504	8-729-194-57	TRANSISTOR	2SC945-P		
Q505	8-729-194-57	TRANSISTOR	2SC945-P		
Q506	8-729-281-52	TRANSISTOR	2SC1815-Y		
Q507	8-729-900-61	TRANSISTOR	DTA114ES		
Q508	8-729-900-80	TRANSISTOR	DTC114ES		
Q509	8-729-119-76	TRANSISTOR	2SA1175-HFE		
Q511	8-729-900-65	TRANSISTOR	DTA144ES		
Q512	8-729-900-89	TRANSISTOR	DTC144ES		
		< RESISTOR >			
R415	1-215-460-00	METAL	43K	1%	1/6W
R417	1-249-439-11	CARBON	68K	5%	1/4W
R418	1-247-838-00	CARBON	2K	5%	1/4W
R431	1-249-435-11	CARBON	33K	5%	1/4W
R432	1-247-868-11	CARBON	36K	5%	1/4W
R433	1-247-883-00	CARBON	150K	5%	1/4W
R436	1-249-437-11	CARBON	47K	5%	1/4W
R437	1-249-437-11	CARBON	47K	5%	1/4W
R438	1-247-874-11	CARBON	62K	5%	1/4W
R439	1-249-440-11	CARBON	82K	5%	1/4W
R441	1-247-882-11	CARBON	130K	5%	1/4W
R442	1-249-435-11	CARBON	33K	5%	1/4W
R443	1-247-868-11	CARBON	36K	5%	1/4W
R446	1-249-438-11	CARBON	56K	5%	1/4W
R450	1-247-868-11	CARBON	36K	5%	1/4W
R451	1-247-872-11	CARBON	51K	5%	1/4W
R452	1-249-437-11	CARBON	47K	5%	1/4W
R453	1-247-881-00	CARBON	120K	5%	1/4W
R517	1-249-439-11	CARBON	68K	5%	1/4W
R518	1-247-838-00	CARBON	2K	5%	1/4W
R527	1-249-441-11	CARBON	100K	5%	1/4W
R532	1-249-393-11	CARBON	10	5%	1/4W
R538	1-249-385-11	CARBON	2.2	5%	1/6W
R539	1-249-392-11	CARBON	8.2	5%	1/4W

Ref.No.	Part No.	Description				Remark
R540	1-249-392-11	CARBON	8.2	5%	1/4W	
		< VARIABLE RESISTOR >				
RV400	1-230-496-11	RES, ADJ, CARBON	10K(A-DECK PB LEVEL L)			
RV401	1-230-496-11	RES, ADJ, CARBON	10K(B-DECK PB LEVEL L)			
RV402	1-230-496-11	RES, ADJ, CARBON	10K(REC LEVEL L)			
RV403	1-230-499-11	RES, ADJ, CARBON	100K(REC BIAS L)			
RV500	1-230-496-11	RES, ADJ, CARBON	10K(A-DECK PB LEVEL R)			
RV501	1-230-496-11	RES, ADJ, CARBON	10K(B-DECK PB LEVEL R)			
RV502	1-230-496-11	RES, ADJ, CARBON	10K(REC LEVEL R)			
RV503	1-230-499-11	RES, ADJ, CARBON	100K(REC BIAS R)			
RV504	1-230-495-11	RES, ADJ, CARBON	2.2K(TAPE SPEED Hi)			
RV505	1-230-495-11	RES, ADJ, CARBON	2.2K(TAPE SPEED NOR)			
		< RELAY >				
RY400	1-515-614-11	RELAY				
		< TRANSFORMER >				
T500	1-433-349-11	TRANSFORMER, BIAS OSCILLATION				
**********						
*	A-4347-117-A	POWER BOARD, COMPLETE				
		**********				
		< CAPACITOR >				
C601	1-126-176-11	ELECT	220uF	20%	10V	
C602	1-124-443-00	ELECT	100uF	20%	10V	
C603	1-126-101-11	ELECT	100uF	20%	16V	
C701	1-124-925-11	ELECT	2.2uF	20%	100V	
C702	1-162-286-31	CERAMIC	220PF	10%	50V	
C704	1-162-286-31	CERAMIC	220PF	10%	50V	
C705	1-126-101-11	ELECT	100uF	20%	16V	
C707	1-124-910-11	ELECT	47uF	20%	50V	
C708	1-124-667-11	ELECT	10uF	20%	100V	
C710	1-130-489-00	MYLAR	0.033uF	5%	50V	
C751	1-124-925-11	ELECT	2.2uF	20%	100V	
C752	1-162-286-31	CERAMIC	220PF	10%	50V	
C754	1-162-286-31	CERAMIC	220PF	10%	50V	
C755	1-126-101-11	ELECT	100uF	20%	16V	
C757	1-124-910-11	ELECT	47uF	20%	50V	
C760	1-130-489-00	MYLAR	0.033uF	5%	50V	
C763	1-124-667-11	ELECT	10uF	20%	100V	
C903	1-124-557-11	ELECT	1000uF	20%	25V	
C906	1-130-495-00	MYLAR	0.1uF	5%	50V	
C907	1-106-367-00	MYLAR	0.01uF	5%	200V	
C908	1-106-367-00	MYLAR	0.01uF	5%	200V	
C909	1-128-493-11	ELECT	4700uF	20%	63V	
C910	1-128-493-11	ELECT	4700uF	20%	63V	
C911	1-124-925-11	ELECT	2.2uF	20%	100V	
C913	1-124-925-11	ELECT	2.2uF	20%	100V	
C914	1-124-910-11	ELECT	47uF	20%	50V	
C918	1-130-495-00	MYLAR	0.1uF	5%	50V	
C919	1-124-564-11	ELECT	4700uF	20%	25V	
C920	1-124-564-11	ELECT	4700uF	20%	25V	
C925	1-124-907-11	ELECT	10uF	20%	50V	
C927	1-124-463-00	ELECT	0.1uF	20%	50V	
C929	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C930	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C942	1-101-005-00	CERAMIC	0.022uF		50V	
		< CONNECTOR >				
* CN701	1-691-179-11	CONNECTOR (BOARD TO BOARD) 9P				
* CN702	1-691-179-11	CONNECTOR (BOARD TO BOARD) 9P				
* CN957	1-569-509-11	CONNECTOR (SOCKET) 4P				
		< DIODE >				
D601	8-719-987-63	DIODE	1N4148M			
D602	8-719-987-63	DIODE	1N4148M			
D701	8-719-815-85	DIODE	1S1585			
D751	8-719-815-85	DIODE	1S1585			
D901	8-719-200-82	DIODE	11ES2			
D902	8-719-200-82	DIODE	11ES2			
D903	8-719-200-82	DIODE	11ES2			
D904	8-719-200-82	DIODE	11ES2			
D907	8-719-302-38	DIODE	RBV-602-01			
D908	8-719-987-63	DIODE	1N4148M			
D911	8-719-002-48	DIODE	UZL-27H			
D916	8-719-312-09	DIODE	RBA-402			
D921	8-719-014-66	DIODE	UZP-5.6B			
D922	8-719-987-63	DIODE	1N4148M			
		< IC >				
IC601	8-759-111-68	IC	uPC1237HA			
IC701	8-749-921-68	IC	STK-4231MK2			
IC901	8-759-820-13	IC	L78MR06			
		< COIL >				
L701	1-420-872-00	COIL, AIR CORE				
L751	1-420-872-00	COIL, AIR CORE				
		< TRANSISTOR >				
Q601	8-729-900-63	TRANSISTOR	DTA124ES			
Q701	8-729-140-84	TRANSISTOR	2SC1841-PAFAEA			
Q751	8-729-140-84	TRANSISTOR	2SC1841-PAFAEA			
Q901	8-729-119-78	TRANSISTOR	2SC2785-HFE			
Q902	8-729-141-83	TRANSISTOR	2SB1094-LK			

POWER | POWER SW | PRIMALY

Ref.No.	Part No.	Description				Remark
		< RESISTOR >				
R601	1-249-440-11	CARBON	82K	5%	1/4W	
R602	1-249-441-11	CARBON	100K	5%	1/4W	
R603	1-249-437-11	CARBON	47K	5%	1/4W	
R604	1-249-438-11	CARBON	56K	5%	1/4W	
R605	1-249-437-11	CARBON	47K	5%	1/4W	
R606	1-249-433-11	CARBON	22K	5%	1/4W	
⚠R608	1-216-481-11	METAL OXIDE	1.2K	5%	3W	F
R701	1-249-417-11	CARBON	1K	5%	1/4W	
R702	1-249-438-11	CARBON	56K	5%	1/4W	
R703	1-247-828-11	CARBON	750	5%	1/4W	
R704	1-249-438-11	CARBON	56K	5%	1/4W	
R705	1-249-425-11	CARBON	4.7K	5%	1/4W	
R706	1-247-840-00	CARBON	2.4K	5%	1/4W	
R707	1-247-840-00	CARBON	2.4K	5%	1/4W	
R709	1-247-700-11	CARBON	100	5%	1/4W	
R710	1-217-611-00	RES, METAL PLATE 0.1				
R711	1-249-417-11	CARBON	1K	5%	1/4W	
R712	1-249-435-11	CARBON	33K	5%	1/4W	
R713	1-249-441-11	CARBON	100K	5%	1/4W	
R718	1-249-393-11	CARBON	10	5%	1/4W	
R719	1-249-393-11	CARBON	10	5%	1/4W	
R720	1-249-393-11	CARBON	10	5%	1/4W	
R721	1-249-393-11	CARBON	10	5%	1/4W	
R751	1-249-417-11	CARBON	1K	5%	1/4W	
R752	1-249-438-11	CARBON	56K	5%	1/4W	
R753	1-247-828-11	CARBON	750	5%	1/4W	
R754	1-249-438-11	CARBON	56K	5%	1/4W	
R755	1-249-425-11	CARBON	4.7K	5%	1/4W	
R756	1-247-840-00	CARBON	2.4K	5%	1/4W	
R757	1-247-840-00	CARBON	2.4K	5%	1/4W	
R760	1-217-611-00	RES, METAL PLATE 0.1				
R761	1-249-417-11	CARBON	1K	5%	1/4W	
R762	1-249-435-11	CARBON	33K	5%	1/4W	
R763	1-249-441-11	CARBON	100K	5%	1/4W	
R768	1-249-393-11	CARBON	10	5%	1/4W	
R769	1-249-393-11	CARBON	10	5%	1/4W	
R770	1-249-393-11	CARBON	10	5%	1/4W	
R771	1-249-393-11	CARBON	10	5%	1/4W	
R772	1-247-700-11	CARBON	100	5%	1/4W	
R902	1-249-425-11	CARBON	4.7K	5%	1/4W	
R903	1-249-437-11	CARBON	47K	5%	1/4W	
R904	1-249-429-11	CARBON	10K	5%	1/4W	
R906	1-249-426-11	CARBON	5.6K	5%	1/4W	
R910	1-249-417-11	CARBON	1K	5%	1/4W	
R911	1-249-429-11	CARBON	10K	5%	1/4W	
R912	1-249-405-11	CARBON	100	5%	1/4W	
R913	1-249-405-11	CARBON	100	5%	1/4W	

Ref.No.	Part No.	Description				Remark
⚠R914	1-215-890-11	METAL OXIDE	470	5%	2W	F
		< RELAY >				
RY601	1-515-501-00	RELAY				
**********						
*	1-642-823-11	POWER SW BOARD				
		**********				
		< SWITCH >				
S117	1-554-303-21	SWITCH, TACTILE(SYSTEM POWER)				
**********						
*	1-642-818-11	PRIMALY BOARD				
		**********				
	1-533-217-31	HOLDER, FUSE				
*	4-942-204-01	PLATE, GROUND				
		< CAPACITOR >				
C901	1-161-744-00	CERAMIC	0.01uF			400V
C902	1-130-487-00	MYLAR	0.022uF	5%		50V
		< CONNECTOR >				
* CN901	1-564-321-00	PIN, CONNECTOR 2P				
CN904	1-535-139-00	BASE POST 22MM (10MM PITCH) 2P				
* CN907	1-506-509-11	PIN, CONNECTOR 4P				
		< DIODE >				
D905	8-719-987-63	DIODE 1N4148M				
		< FUSE >				
⚠F901	1-576-110-11	FUSE (6A/125V)				
		< RESISTOR >				
⚠R901	1-202-725-00	SOLID	3.3M	10%	1/2W	
		< RELAY >				
RY901	1-515-720-11	RELAY				
		< TRANSFORMER >				
⚠T902	1-449-993-21	TRANSFORMER, POWER				
**********						

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No.	Part No.	Description			Remark
*	1-642-824-11	SHIFT SW BOARD			
		**********			
		< SWITCH >			
S111	1-554-303-21	SWITCH, TACTILE(SHIFT)			
**********					
*	1-642-821-11	TC SW BOARD			
		**********			
		< CAPACITOR >			
C590	1-126-301-11	ELECT	1uF	20% 50V	
		< TRANSISTOR >			
Q517	8-729-900-89	TRANSISTOR	DTC144ES		
Q518	8-729-900-89	TRANSISTOR	DTC144ES		
Q519	8-729-900-89	TRANSISTOR	DTC144ES		
		< RESISTOR >			
R562	1-249-423-11	CARBON	3.3K	5% 1/4W	
R563	1-249-416-11	CARBON	820	5% 1/4W	
R564	1-249-424-11	CARBON	3.9K	5% 1/4W	
R565	1-249-437-11	CARBON	47K	5% 1/4W	
R566	1-249-421-11	CARBON	2.2K	5% 1/4W	
R567	1-249-427-11	CARBON	6.8K	5% 1/4W	
R590	1-249-417-11	CARBON	1K	5% 1/4W	
		< SWITCH >			
S401	1-572-714-11	SWITCH, PUSH(DOLBY NR)			
S402	1-692-056-11	SWITCH, PUSH(TAPE SELECTOR)			
S403	1-572-714-11	SWITCH, PUSH(DUBBING SPEED)			
**********					
		MISCELLANEOUS			
		**********			
⚠10	1-690-609-11	CORD, POWER			
60	1-590-237-11	WIRE, FLAT TYPE (19 CORE)			
61	1-590-459-11	WIRE, FLAT TYPE (11 CORE)			
⚠F901	1-576-110-11	FUSE (6A/125V)			
⚠F903	1-576-104-11	FUSE (2A/250V)			
⚠F904	1-576-104-11	FUSE (2A/250V)			
HE901	1-543-319-11	HEAD, MAGNETIC (REC/PB)			
HP901	1-543-319-11	HEAD, MAGNETIC (REC/PB)			
HRP901	1-543-319-11	HEAD, MAGNETIC (REC/PB)			
M901	X-3362-377-1	MOTOR (WH) ASSY			
⚠T901	1-450-802-11	TRANSFORMER, POWER (US, Mexican)			
⚠T901	1-450-915-11	TRANSFORMER, POWER (Canadian)			
**********					

Ref.No.	Part No.	Description	Remark
		ACCESSORIES & PACKING MATERIALS	
		**********	
*	3-376-136-01	CUSHION (HALF)	
*	4-950-165-01	CUSHION	
**********			
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#2	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	
#3	7-682-561-04	SCREW +BVTT 4X8 (S)	
#4	7-685-903-21	SCREW +PTPWH 3X8 (TYPE2)	
#5	7-685-650-79	SCREW +BVTP 3X16 TYPE2 IT-3	
#6	7-685-103-19	SCREW +P 2X5 TYPE2 NON-SLIT	
#7	7-688-001-01	W 2, SMALL	
#8	7-621-775-20	SCREW +B 2.6X5	
#9	7-623-921-01	RING, RETAINING, CAPSTAN	
#10	7-685-133-19	SCREW +P 2.6X6 TYPE2	
#11	7-685-135-19	SCREW +BTP 2.6X10 TYPE2 N-S	

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